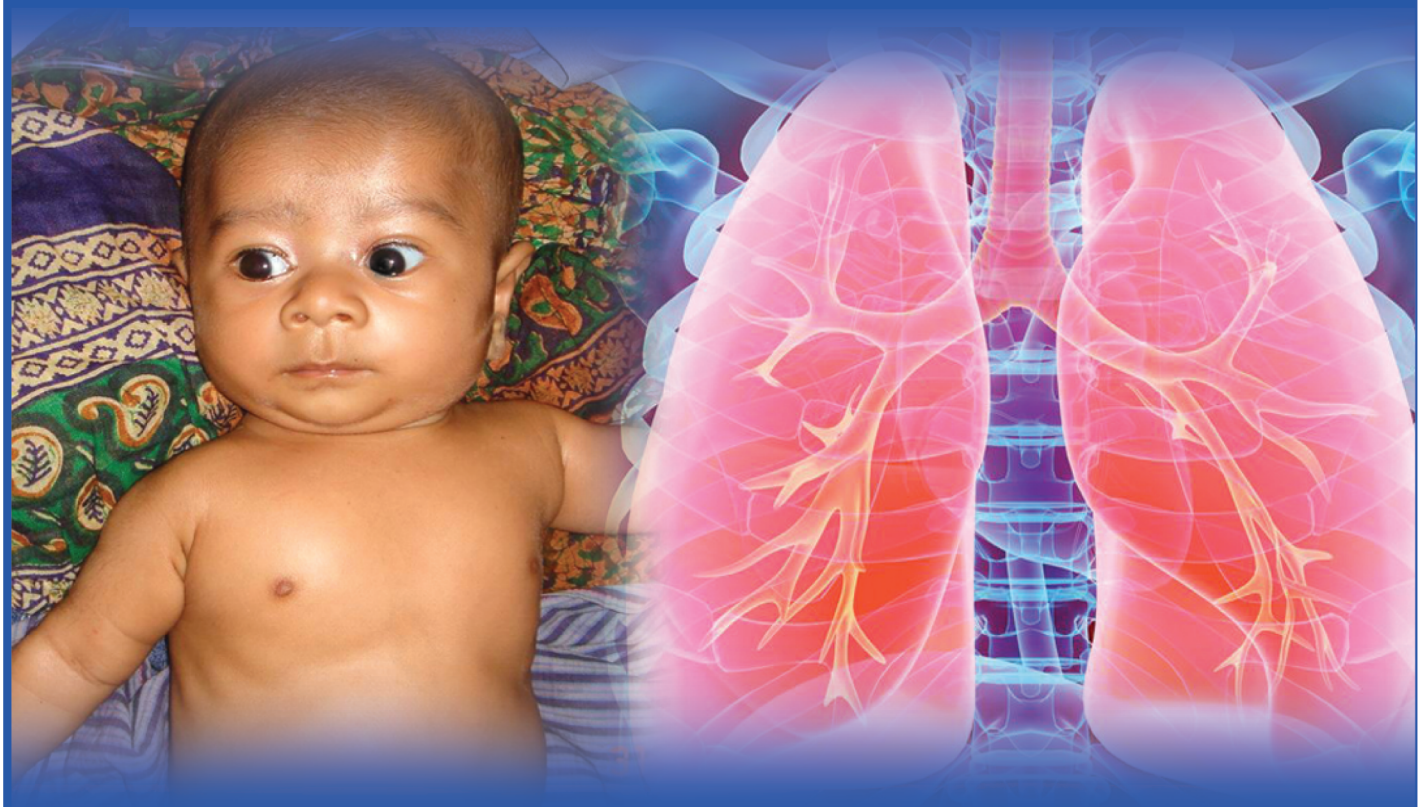
Research Compendium



Knowledge Generation and Dissemination

Central to a Teacher's Profession

Prof Dr ARM Luthful Kabir

ঢাকা, ২ ফেব্রুয়ারী ২০১০, ২০ মাঘ ১৪১৬, ১৬ সফর ১৪৩১ মঙ্গলবার রেজি. নং ডিএ ১৮৮০, বর্ষ ১২, সংখ্যা ৮৭, দাম ৮ টাকা

প্রথম আলো

নগর সংস্করণ

শিশুরোগ নিয়ে নতুন গবেষণা

দুই বছরের কম বয়সীর প্রধান রোগ ব্রংকিউলাইটিস, নিউমোনিয়া নয়

শিশির মোড়ল

দেশে দুই বছর বয়সী শিশুদের মধ্যে ব্রংকিউলাইটিসের প্রাদুর্ভাব বেশি। ব্রংকিউলাইটিস চিকিৎসায় অ্যান্টিবায়োটিকের দরকার নেই। সম্প্রতি প্রকাশিত দুটি গবেষণায় এ তথ্য তুলে ধরা হয়েছে। তবে সরকারের সর্বশেষ হিসাবে আগের মতোই বলা হচ্ছে, এ বয়সী শিশুদের মধ্যে নিউমোনিয়ার প্রকোপ বেশি।

শিশু ও মাতৃস্বাস্থ্য প্রতিষ্ঠানের সাবেক নির্বাহী পরিচালক অধ্যাপক এ আর এম লুৎফুল কবীরের তত্ত্বাবধানে দুটি গবেষনা চালানো হয়। তিনি প্রথম আলোকে বলেন, "প্রায় সবারই সাধারণ ধারনা, নিউমোনিয়া শিশুদের শ্বাসকষ্টের প্রথম ও প্রধান কারণ। কিন্তু আমারা প্রামাণ করেছি, নিউমোনিয়া নয়, **ব্রংকিউলাইটিসই শিশুদের শ্বাসকষ্টের প্রধান কারণ। আর ব্রংকিউলাইটিস চিকিৎসায় অ্যান্টিবায়োটিকের কোন প্রায়োজন নেই"**।

২০০৯ সালে দেশের ৪২টি হাসপাতালে (থানা স্বাস্থ্য কমপ্লেক্স ১২, জেলা সদর হাসপাতাল ১২, মেডিকেল কলেজ হাসপাতাল ১৪ ও বিশেষায়িত হাসপাতাল ৪) চিকিৎসা নিতে আসা পাঁচ বছরের কম বয়সী পাঁচ হাজার ১৫৭টি শিশুর তথ্য সংগ্রহ করেন একদল চিকিৎসক। তারা শিশুর শ্বাসতন্ত্রের রোগের ওপর প্রশিক্ষণপ্রাপ্ত এবং তারা দেখেন, ৬৭ শতাংশ শিশু (তিন হাজার ৪৮৪ শিশু) শ্বাসতন্ত্রজনিত সমস্যার কারণে হাসপাতালে এসেছিল। **তাদের ৪৮ শতাংশ এসেছিল সাধারণ সর্দিকাশি নিয়ে। বাকিদের ২১ শতাংশ ছিল ব্রংকিউলাইটিসে আক্রান্ত, ১১ দশমিক ৫ শতাংশ নিউমোনিয়া, ৮ শতাংশ হাঁপানি** এবং ১১ দশমিক ৫ শতাংশ অন্যান্য রোগে আক্রান্ত।

ফুসফুসের একটি অংশের নাম ব্রংকিউলস। এই ব্রংকিউলস ভাইরাসে আক্রান্ত হলে তাকে বলে ব্রংকিউলাইটিস। ব্রংকিউলসের ওপরে পাতার মতো ফুসফুসের অন্য অংশের নাম এলভিওলাই। এ এলভিওলাই ব্যাকটেরিয়ায় আক্রান্ত হলে তাকে বলে নিউমোনিয়া। লুৎফুল কবীর বলেন, ব্রংকিউলাইটিস ও নিউমোনিয়ার মধ্যে প্রার্থক্য করতে না পারার কারণে শিশুদের সাধারণত নিউমোনিয়ার চিকিৎসাই দেওয়া হয়। শিশুরোগ চিকিৎসক ও শিশু বিকাশ কেন্দ্রের পরিচালক নায়লা জামান খান বলেন, দুটি রোগই ফুসফুসের। প্রশিক্ষণ ও যথেষ্ট দক্ষতা না থাকলে দুটি রোগের পার্থক্য করা কঠিন।

সম্প্রতি স্বাস্থ্য অধিদপ্তর হেলথ বুলেটিন ২০০৯ নামে যে বার্ষিক প্রতিবেদন প্রকাশ করেছে, তাতে সরকারি হাসপাতালে মৃত্যুর প্রধান ১০টি কারণ দেখানো হয়। এতে দেখা যায়, ৭-২৮ দিন বয়সী শিশুমৃত্যুর প্রধান কারণ সেপ্টিসেমিয়া (২৫.২ শতাংশ); দ্বিতীয় প্রধান কারণ নিউমোনিয়া (২৪.৬ শতাংশ) এক মাস থেকে এক বছর বয়সী শিশুমৃত্যুর প্রধান কারণ নিউমোনিয়া (৪২.৪ শতাংশ) আবার এক থেকে চার বছর বয়সী শিশু মৃত্যুর প্রধান কারণ নিউমোনিয়া (২৮.১ শতাংশ)।

> ফুসফুসের একটি অংশের নাম ব্রংকিউলস। এই ব্রংকিউলস ভাইরাসে আক্রান্ত হলে তাকে বলে ব্রংকিউলাইটিস। ব্রংকিউলসের ওপরে পাতার মতো ফুসফুসের অন্য অংশের নাম এলভিওলাই। এ এলভিওলাই ব্যাকটেরিয়ায় আক্রান্ত হলে তাকে বলে নিউমোনিয়া।

সরকারি হিসাবে কোথাও ব্রংকিউলাইটিসের উল্লেখ নেই। তবে ওই প্রতিবেদনে বলা হয়, বিশ্বজুড়ে ব্রংকিউলাইটিসকে জনস্বাস্থ্য সমস্যা হিসেবে দেখা হচ্ছে। বাংলাদেশে হয়তো নিউমোনিয়ার চিকিৎসার সঙ্গেই এর চিকিৎসা হয়। সরকারের এ প্রতিবেদন তৈরী করেছে স্বাস্থ্য অধিদপ্তরের ম্যানেজমেন্ট ইনফরমেশন সিস্টেম (এমআইএস)। এমআইএসের পরিচালক অধ্যাপক আবুল কালাম আজাদ প্রথম আলোকে বলেন, 'সরকারের বিভিন্ন হাসপাতাল থেকে যে তথ্য আসে, তার ভিত্তিতে আমরা প্রতিবেদন তৈরী করি।

রোগতত্ত্ব, রোগ নিয়ন্ত্রণ ও গবেষণা প্রতিষ্ঠানের পরিচালক অধ্যাপক মাহমুদুর রহমান বলেন, সরকারের পরিসংখ্যানে তীব্র শ্বাসকষ্টজনিত রোগ বা এআরআই (এক্যুইট রেসপিরেটরি ট্রাক্ট ইনফেকশন) নামে একটি শ্রেণী আছে। ব্রংকিউলাইটিস এআরআই শ্রেনীর মধ্যে রেখে সরকার হিসাব করে। এটা আন্তর্জাতিক রীতি মেনেই করা হয়।

শিশুরোগ বিশেষজ্ঞ অধ্যাপক এম কিউ কে তালুকদার বলেন, দেশে এক থেকে দুই বছর বয়সী শিশুদের ব্রংকিউলাইটিসে সংক্রমণের হার অনেক বেশি। কিন্তু চিকিৎসকেরা অনেকে সেটা জানেন না তাই এর হিসাব পাওয়া যায় না।

অ্যান্টিবায়োটিকের দরকার নেই ঃ লুৎফুল কবীরের তত্ত্বাবধানে পরিচালিত দ্বিতীয় জরিপে বলা হয়, ব্রংকিউলাইটিস চিকিৎসায় শিশুকে অ্যান্টিবায়োটিক দেওয়ার দরকার হয় না। যাঁরা নিউমোনিয়া ভেবে অ্যান্টিবায়োটিক দেন, তাঁরা আসলে ভুল চিকিৎসাই করেন। লুৎফুল কবীর জানান, অ্যান্টিবায়োটিকের ব্যবহার নিয়ে তাঁরা ৩২৭টি হাসপাতালে ভর্তি হওয়া ব্রংকিউলাইটিসে আক্রান্ত শিশু নিয়ে গবেষণা শুরু করেন। এর মধ্যে ২৯৫টি শিশুকে চূড়ান্ত গবেষণার জন্য বাছাই করা হয়।

গবেষক দল শিশুদের তিনটি দলে ভাগ করে গবেষণা চালায়। একটি দলের ৯৯টি শিশুর রক্তে অ্যান্টিবায়োটিক (এম্পিসিলিন) দিয়ে, আরেকটি দলের ৯৯টি শিশুর মুখে অ্যান্টিবায়োটিক দিয়ে এবং অন্য আরেক দলের ৯৭টি শিশুকে কোনো অ্যান্টিবায়োটিক না দিয়ে চিকিৎসা করা হয়। সব শিশুকেই সহায়ক চিকিৎসা দিয়েছেন গবেষকেরা। প্রয়োজনে শিরায় স্যালাইন অথবা নাকে নল দিয়েও দুধ খাওয়ানো হয়।

গবেষণায় দেখা গেছে, প্রতিটি দলের শিশুই সমানভাবে সেরে ওঠে। এসব শিশুর হাসপাতালে থাকার গড় সময় ছিল প্রায় চার দিন, এই শিশুদের একজনও মারা যায়নি।

গবেষণার ফলাফল ব্যাপকভাবে প্রচার হওয়া দরকার এমন মন্তব্য করেছেন একাধিক শিশুরোগ বিশেষজ্ঞ। এ ব্যাপারে এম কিউ কে তালুকদার বলেন, এ গবেষণা শিশুরোগ চিকিৎসায় বিশেষ ভূমিকা রাখবে। তিনি বলেন, গবেষক দল এ রোগের ব্যবস্থাপনা ও চিকিৎসা এবং নিউমোনিয়ার সঙ্গে কিভাবে পার্থক্য করা যায় - সে ব্যাপারে নির্দেশিকা (গাইডলাইন) তৈরী করতে পারে। তিনি বলেন যে শিশু মায়ের দুধ খায়, সে সহজে ব্রংকিউলাইটিস বা নিউমোনিয়ায় আক্রান্ত হয় না।

Research Compendium

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Central to a Teacher's Profession

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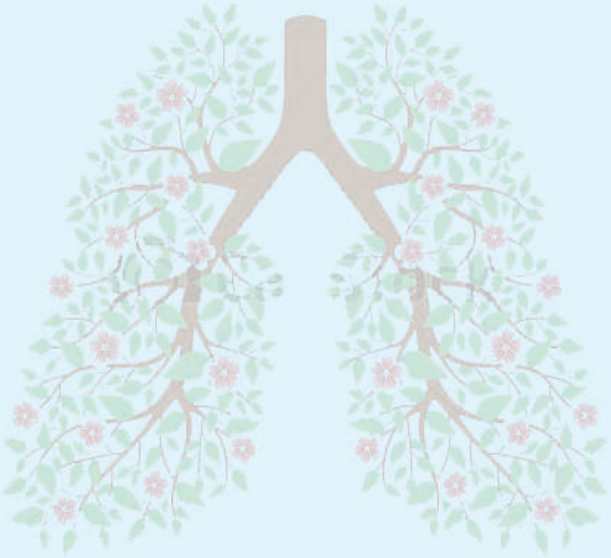

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Dedicated to

The children who made me
physician, child specialist and researcher

Preface

The central job of a teacher is knowledge generation through research and dissemination of his stock of knowledge, skills and expertise to the students and the colleagues. I have been lucky enough to be blessed with a congenial research environment during my training period (1984-1987) in the Department of Paediatrics of the then Institute of Post Graduate Medicine and Research (IPGMR), presently Bangabandhu Sheikh Mujib Medical University (BSMMU). I had a mentor, the Icon Pediatrician of Bangladesh Prof M Q-K Talukder and the guidance of the legendary Pediatricians Prof Md Monimul Hoque and Prof Chowdhury Ali Kawser, who to be credited for tuning up my mind towards research.

Since acquiring Post Graduate degree (FCPS) I was posted at the Institute of Child and Mother Health (ICMH), Matuail, Dhaka where I could enjoy a long 17 years of uninterrupted service (1992-2009) and could devote to dedicated and committed research work in child health.

We could prove that the commonest cause of respiratory distress in young children is bronchiolitis (21%) as against pneumonia (11.5%) in a nationwide study *(Journal of Respiratory Medicine Research and Treatment 2016)* and moreover, management of bronchiolitis is possible without antibiotics as shown in a RCT conducted in five centers with the largest sample size (295) ever conducted in a three arm study *(Acta Pediatrica 2009)*. Previously, our doctors used to prescribe antibiotics in 99% cases in the treatment of bronchiolitis. We need to correctly diagnose and treat bronchiolitis to limit the rampant and uncontrolled use of antibiotics which might cause havoc in future in our country.

We could make aware our doctors particularly, the pediatricians as regards *childhood asthma, pneumonia, foreign body (FB) aspiration,* and *cystic fibrosis*. The prevalence of childhood asthma is 7%, and our children are champions in allergic rhinitis (20%), highest in the world. FB aspiration can lead to lung damage, or death. We are now aware about the causes of persistent / recurrent pneumonia in our country like recurrent aspiration, cystic fibrosis, pulmonary tuberculosis, congenital heart disease and foreign body aspiration. We were totally unaware about the progressive lung damaging disease of cystic fibrosis and many a time, these children are managed with anti-TB drugs with no benefit and such a child in the family results in sheer frustration and disappointment on the part of every member of the family.

There are 5 sections (Bronchiolitis, Asthma, Other Respiratory, Non-respirtory and Books-Reports) in this book having 167 research work that included 81 published articles (48 original research work, 32 as principal authors, 35 indexed), 71 presentations (7 in abroad) and 20 dissertations/ theses. Once the research work has been published, scientific presentations of the same research have been exclued in the compendium. Only the abstracts of the research have been furnished here except 3 very important full articles.

I am grateful to all my fellow colleagues who allowed me to work with them and my honorable parents and loving children who gave me the opportunity to work with them. I think, the contributions of all the authors/ co-authors, parents and children as compailed in this compendium will have a lasting effect on way to establishing a knowledge-based society.

My Father Dr Abdul Latif Sarker, Mother Hasna Hena Latif, Wife Prof Dr Nazneen Kabir and only Daughter Dr Farhat Lamisa Kabir deserve the deepest sense of appreciation for providing me a life of ease by the grace of Almighty Allah.

Prof ARM Luthful Kabir

Foreword

Professor ARM Luthful Kabir, popularly known as Luthful Kabir Sir to his students, is known to me when he joined as Assistant Registrar in the Department of Paediatrics at the then IPGMR (now known as Bangabandhu Sheikh Mujib Medical University, BSMMU) in the year 1984. There was a bunch of young, enthusiastic, hard working trainees at the same time. They pursued an arduous but fruitful training. All of them have excelled in their own field and been working as leading specialists in the country. I feel myself gifted and honored to be there as one of the team members that lead to imbibe them to develop themselves. Professor L Kabir was identifiable amongst those glitters.

He was sincere to his work, patients and their parents as well. He has excellent documentation skill that is how he could publish a book with nearly 200 case illustrations he had managed himself over his professional career. His inquisitive nature helped him to solve lots of clinical problems referred by our Mentor, Professor M Q-K Talukder. He is always energetic. When he had forced bed-rest due to foot bone fracture, he completed the final compilation of his first book. His immense perseverance helped him to achieve the rare feat to document growth of his only daughter from birth till 18 years of age after 231 years of doing the same first by Dr de Montbeillard on his son!

His research instinct allows him to study on a wide range of issues. Even working at private practice, he could think of research issues and implement them. His presentation style is also unique. The book on case illustration is an one-off example of that. But, he had never compromised the scientific values and necessity.

Though he has put his feet on different fields but respiratory system problem is his passion. He can be considered as the pioneer researcher in this country on many problems of pediatric respiratory system like brochiolitis, asthma, pneumonia, foreign body aspiration, fiberoptic broncoscopy and cystic fibrosis. After publishing more than 80 scientific articles and similar number of scientific presentations, he felt the need to compile them to help interested readers in getting all his publications in hand and outcome is this book.

The book is divided into five sections. The first section covers 'Bronchiolitis', his passion topic, followed by his another passion area of Asthma. Rest of the sections covers 'Other respiratory', 'Non-respiratory' and lastly books he has published or contributed and dissertation/theses he guided during his long teaching career. Each section is further grouped into published papers, home and abroad, followed by scientific presentations that were not published. Citing full reference at the beginning of the topic will help reader to get the full paper, if needed.

This compendium will definitely act as knowledge mine for different illnesses and health problems in Bangladesh, particularly in the field of pediatric respiratory illnesses. This will help any potential researcher as well as young learner who may want to know about the health problems of the children in this country though a single collection. I am sure, an online version will soon be made available that will be more useful in future.

Above all, this compendium is a classic example of the genuine and true nature of a teacher whose motto would be *knowledge generation and dissemination* throughout the academic career.

Prof Chowdhury Ali Kawser, FCPS, PhD (UK)
Former Chairman, Department of Pediatrics and
Former Pro-Vice Chancellor
Bangabandhu Sheikh Mujib Medical University, Dhaka

Examples of knowledge generated

01 **Respiratory diseases**
The magnitude of paediatric respiratory disorders is very high and more than two-third suffer from common respiratory disorders such as common cold, bronchiolitis, pneumonia and asthma. Indiscriminate use of antibiotics are rampant for these common respiratory disorders

02 **Bronchiolitis**
The commonest cause of respiratory distress in young children is bronchiolitis, not pneumonia as previously thought. Bronchiolitis can be managed without antibiotics and the rampant use of antibiotics can be prevented

03 **Pneumonia**
The risk factors of recurrent or persistent pneumonia are recurrent aspiration (GERD), cystic fibrosis, pulmonary tuberculosis, congenital heart disease and foreign body aspiration.

04 **Childhood Asthma**
Four million children are suffering from childhood asthma and the prevalence of allergic rhinitis is highest (20%) in the world

05 **Foreign body aspiration**
Our children are vulnerable to foreign body aspiration and consequences are bronchiectasis or lung damage if not managed properly

06 **Cystic fibrosis**
Cystic fibrosis should be considered as an important cause of bilateral bronchiectasis in children of our country

07 **Rickets**
The prevalence of rickets in children in Chakaria (of Cox's Bazar district) is 1% and the cause is calcium deficiency

08 **Parental behavior**
More mothers (60.5-84%) than fathers (43%) of low socioeconomic conditions are abusive to their children in terms of physical torture.

09 **Consanguinity of parents**
Consanguinity between parents increases about four times more chance of complex diseases in their children whose diagnosis and treatment is difficult in our situation

10 **Adopted children**
More female children are adopted in our society and the adoption is not legally documented. Financial insecurity and death of biological mothers are important causes of adoption

Research Compendium

Contents

01 Bronchiolitis

Article Published *Conference Presentation* *Disseration / Thesis* *Others*

Bronchiolitis: was there an Epidemic ?

ARM Luthful Kabir

There was an outbreak of bronchiolitis in last winter and spring in Bangladesh. In the months of January and February of this year (2001) different hospitals of Dhaka City reported about 348 children being admitted with bronchiolitis. The hospitals are Institute of Child and Mother Health (221 cases), Dhaka Medical College Hospital (54 cases), Dhaka Shishu Hospital (52 cases), Sir Salimullah Medical College and Mitford Hospital (21 cases), There were also reports of 2093 cases of 'severe pneumonia' or 'ARI' from different hospitals outside Dhaka. The hospitals include Mymensingh Medical College Hospital (107 cases), Nandail Upazilla Health Complex, Mymensingh (355 cases), Laksmipur Sadar Hospital (16 cases), Noakhali General Hospital (237 cases), Jhenaidaha Sadar Hospital (573 cases), Magura Sadar Hospital (522 cases), Chittagong Medical College Hospital (CMCH) (283 cases). Moreover, 85 of these cases were presented with first attack of wheeze during this attack. The median age of the children was 3.0 months. There were 78% male and 22% female.

The children outside Dhaka were mostly treated with ceftriaxone (72.5%) and corticosteroids (70.5%). The overall mortality was 5%.

The study with 348 cases of bronchiolitis from Dhaka city showed that median age of affected children was 3.0 months with male 64% and female 36%. There had been typical clinical presentation like the development of low grade fever along with cough and coryzal symptoms followed by rapid development of wheeze, respiratory distress, feeding difficulty, fast breathing, chest indrawing, anterior bulging of the chest wall, crackles and hyperinflation on chest radiography. Children with bronchiolitis were found positive for RSV antibody (IgM and IgG) in almost 80% cases. The median duration of hospital stay was 4 days. The mortality was 1%.

Bronchiolitis is an acute inflammatory respiratory illness of infants and young children occurring in the first 2 years of age. It is a viral disease. The most important causative agent is respiratory syncitial virus (RSV) and others are parainfluenzae, influenzae, adenovirus, and rhinovirus etc. During an epidemic RSV is most commonly responsible agent. Bronchiolitis is a clinical diagnosis. Wheeze and hyperinflation on chest radiography in infancy is most likely due to bronchiolitis. The associated features are running nose, low grade fever, toxic appearance, feeding difficulty, restlessness and chest indrawing. The management includes isolation of the case, oxygen therapy, hydration, nutrition, inhaled-adrenaline and systemic corticosteroid. Antibiotics have little therapeutic value in bronchiolitis as bacterial infections are rare in bronchiolitis.

Antibiotics may be given if the child is toxic, febrile, blood count shows leucocytosis and chest x-ray is suggestive of lobar infiltrates. The implication of such an outbreak of bronchiolitis is that there is 70% chance of recurrent wheeze and 30% possibility of asthma in the child in future.

There are several concerns as to the management of bronchiolitis in our situation. The physicians are not recognizing bronchiolitis as a disease entity. Bronchiolitis is now being diagnosed as ARI or pneumonia. The diagnosis of the young children's respiratory problem are being made on the basis of WHO criteria for the classification of ARI cases but the treatment given mostly with third generation antibiotics along with corticosteroids. The specific treatment of oxygen therapy, is being ignored.

ARI control program has developed lot of awareness about pneumonia in our community. Our mothers are now very much conscious about the development of respiratory distress in their children. Mothers can tell themselves about 'pneumonia' in their children. It is expected that the health workers working in the field level would pick up cases and would classify the cases in accordance to the ARI guidelines. They would give home treatment, antibiotics or refer the cases to hospitals for proper management. Doctors are supposed to do the specific diagnosis and provide appropriate treatment. On the contrary, our doctors are keeping themselves confined to the diagnosis of 'pneumonia' in case of development of respiratory distress (chest indrawing) from any cause. The children with bronchiolitis, asthma, heart failure, croup, laryngomalacia, and real pneumonia are all being diagnosed as pneumonia. The problem of bronchiolitis should be recognized by our physicians The management of bronchiolitis must be optimized by providing adequate and effective humidified oxygen therapy, inhaled adrenaline, care of hydration and nutrition, rational use of antibiotics, counselling of parents about the self-limiting nature of the disease and the future possibility of reactive airway disease.

Bronchiolitis: An Update

ARM Luthful Kabir, Ruhul Amin

Introduction :

Bronchiolitis is the most common cause of lower respiratory tract infections in children worldwide. Respiratory syncitial virus (RSV) is the most frequent agent responsible for this infection. It is the leading cause of bronchiolitis and pneumonia in infants. It may play a major role in the pathogenesis of asthma and chronic obstructive pulmonary disease.

There has been a recent outbreak of bronchiolitis in last winter and spring all over Bangladesh.

So, bronchiolitis needs to be discussed in details about its epidemiology, risk factors, etiology, pathophysiology, diagnosis, management and future course and prognosis.

Epidemiology

The incidence of bronchiolitis has been shown to be as high as 11 cases per 100 children per year of both the first and second 6 months of life. In the first 6 months of life, 6 children per 1000 are hospitalized with bronchiolitis per year in USA.

The incidence peaks during winter and early spring and reaches near zero in late summer and autumn in both hemispheres. In tropical climates, occurrence of RSV bronchiolitis tends to coincide with rainy season. Bronchiolitis caused by other agents occur throughout the year. The age for peak incidence of RSV bronchiolitis is between 2 and 6 months and approximately 80% of all cases occur during the first year of life.

Risk factors

Prematurity is a risk factor for severe lower respiratory tract illness (bronchiolitis, pneumonia) that necessitates hospitalization. Bronchiolitis is slightly more common in boys, who are more likely to experience severe disease. Rates of hospitalization with RSV bronchiolitis is more in lower socioeconomic families. Breast feeding seems to protect against RSV and other wheezing respiratory illnesses in the first four months of age. Infants who reside in crowded environment and have older siblings may be at risk of bronchiolitis.

Exposure to passive smoking, particularly maternal smoking, has been shown to be a risk factor for bronchiolitis in infancy. Indian children living in homes with wood-burning stoves are at higher risk of bronchiolitis and pneumonia. When RSV infection is epidemic, there is 45% risk of acquiring the infection if the children are inpatients for a week or more.

Aetiology

Infective Agents Association with Acute Bronchiolitis

Respiratory syncytial virus, Parainfluenza viruses, Adenovirus, Mycoplasma pneumonae Rhinoviruses, Influenza viruses, Enteroviruses, Herpes simplex virus, Mumps virus

Bronchiolitis and associated infections

There is evidence that the course of bronchiolitis may be atypical or unusually severe if there is simultaneous infection with other pathogens. The other organisms are adenovirus, Pneumocystis carinii, cytomegalovirus, or streptococcus pneumonae as found in 4.8% cases.

Pathogenesis and pathophysiology

RSV is transmitted by direct inoculation of large droplets or by self-inoculation. Recent data suggest that babies who are born with narrower peripheral airways may develop more severe episodes of bronchiolitis when exposed to RSV. The pathological findings associated with bronchiolitis include: epithelial cell necrosis and desquamation; edema of the bronchiolar walls; mucus plugging of airways and peribronchiolar infiltration with lymphocytes. These pathological changes cause hyperinflation of the lung, increased airway resistance, decreased compliance and an increased work of breathing. The non-uniform distribution of the pathological events cause ventilation-perfusion mismatching which results in hypoxaemia. Severe bronchiolitis may result in respiratory muscle fatigue, hypoventilation and carbondioxide retention.

Clinical features

Symptoms

Fast breathing, chest indrawing, unable to feed, fever, vomiting with cough,

Signs

Wheeze, fast breathing (RR>50/min), chest indrawing, crepitations, raised temp (100°F or more), hyperresonance on percussion, wheeze, palpable liver, palpable spleen, grunting, cyanosis, toxic appearance, toarse voice, convulsion

Investigations

Measurement of oxygen saturation by pulse oximetry is widely used to see the oxygen saturation level in blood. Hemoglobin determination should be obtained in order to ensure adequate oxygen carrying capacity. Total leucocyte count (TLC) should be done and the count usually normal in most of the cases.

Chest x-ray ranges from normal to a wide spectrum of finding : hyperinflation of the lungs with patchy areas of atelectasis and increased antero-posterior diameter on lateral view showing fullness of the retrosternal space. Blood gas analysis is done to look into respiratory acidosis or hypercapnea.

Nasopharyngeal aspirates (NPA) can be tested directly for RSV antigen within few hours by ELISA or immunofluorescence. Blood culture may be done to exclude associated bacterial pneumonia. Serum electrolytes, osmolality and urinary osmolality can also be done to detect the effect of inappropriate secretion of anti-diuretic hormone.

Diagnosis

In community based studies, the criteria for defining bronchiolitis have included a physician diagnosis and the first episode of wheezing in a previously healthy child of less than 2 years of age.

In hospital based studies, diverse criteria have been used to define bronchiolitis. The features which characterize bronchiolitis are coryzal symptoms followed by rapid onset of wheeze, fever, tachypnea, chest retractions, crepitation and ronchi with radiographic evidence of hyperinflation. However, most authors agree that wheezing and hyperinflation of the lungs are features required for the diagnosis of bronchiolitis.

Differential diagnosis

The common differential diagnosis of acute bronchiolitis are the following (wheeze is present in all of these conditions):

Viral pneumonia, bacterial pneumonia, pertussis, congestive heart failure, infantile asthma, cystic fibrosis

Management

When to hospitalize?

toxic appearance, unable to feed, respiratory rate 60 per minute or above, cyanosis, hypoxaemia- SaO_2 <94% as measured by pulse oximeter

Supportive management

Most infants and children with bronchiolitis have mild disease and do not require medical attention. These "happy wheezers" despite mild breathlessness, continue normal activity during illness. The traditional approach to symptomatic management of severe bronchiolitis has been supportive care with attention to oxygen therapy, hydration and respiratory support as needed and monitoring of heart rate clinical signs of deterioration monitoring of heart rate, respiratory rate, body temperature, electrolytes, osmolality, pH and clinical signs of deterioration.

Indications for intubation and mechanical ventilation are :

tachycardia (>200 bpm), advancing respiratory insufficiency, listlessness or lethargy, poor peripheral perfusion

Specific management

- Humidified oxygen administration in concentrations of 35 to 40% is adequate for most affected patients to maintain arterial saturation in the range of 94-96%.
- Aerosolized antiviral (Ribavirin) are recommended in highly selected cases like bronchiolitis with heart disease, immunodeficiency, cystic fibrosis, bronchopulmonary dysplasia etc.
- Antibiotics have little therapeutic value in bronchiolitis. Severe bacterial infections are rare in bronchiolitis. Antibiotic therapy as per WHO guideline for ARI may be initiated if the child is toxic, febrile and shows high total leucocyte count (>15,000/cmm) and lobar infiltrate on radiography.

Controversial management

Physicians may feel pressure from parents and nurses to render some form of treatment for bronchiolitis. It should be mentioned that 86% of children in the Canadian study were

treated with bronchodilators and nearly all members of the European Society for Pediatric Infectious Diseases use bronchodilators in children with bronchiolitis. Nebulised bronchodilator are expensive, of only modest clinical benefit in a subset of patients, and have not been shown to reduce morbidity or length of hospital stay.

The use of bronchodilators may even be harmful. It may be secondary to irritant or osmotic effect of the nebulising solution on the airways or bronchodilators may inhibit hypoxia induced pulmonary vasoconstriction resulting in increased intrapulmonary shunting and a decrease in oxygen saturation.

Recently, one study found inhaled recemic epinephrine, more efficacious than salbutamol. The use of inhaled adrenaline in the treatment of moderate-to-severe bronchiolitis in hospitalized infants, as well as oxygen and fluid therapy as other measures are now recommended.

About the use of systemic corticosteroids in bronchiolitis, meta-analysis has suggested a statistically significant improvement in clinical symptoms, length of hospital stay and duration of symptoms.

Course and prognosis

The most critical phase of illness is first 48-72 hours of the onset of cough and dyspnoea. The usual natural course of bronchiolitis is remarkably constant. The duration of maximal respiratory distress is 1 to 2 days, followed by dramatic clinical improvement. During convalescence, some wheezing and prolongation of the expiratory phase during respiration may be observed for 7 to 10 days. Hospital stay for bronchiolitis (and viral pneumonia) is 3-7 days and clinical improvement is apparent by 3 or 4 days. Intubation and ventilation is required in 3% to 7% of hospitalized patients. The case fatality rate is below 1%. Death usually happens from prolonged apnoic spells, uncompensated acidosis or severe dehydration.

Twenty percent of children with bronchiolitis experience a protracted course. Pulmonary function abnormalities and gas-exchange disturbances persists for weeks or months. There is also report of development of chronic lung disease like bronchiolitis obliterans and even bronchiectasis seen most often procedure also disturbs the baby, particularly face following adenovirus infection.

Asthma and chronic obstructive airway disease Long term sequelae are common after bronchiolitis, with upto 70% of infants experiencing recurrent cough and wheezing.

Original Article (Indexed) *Mymensingh Medical Journal 2003, 12(2):128-133*

Evaluation of Hospitalized Infants and Young Children with Bronchiolitis - A Multi Centre Study

ARM Luthful Kabir, Haq N , Hoque M , Ahmed F , Amin R , Hossain A , Khatoon S , Akhter S , Shilpi T , Haq R , Anisuzzaman S , Khan MH, Ahamed S , Khashru A

Objective: Four hundred and twenty nine (429) young children with bronchiolitis admitted consecutively in different hospitals of Bangladesh were evaluated.

Methodology: Three hundred and forty eight (348) children studied for their putative risk factors, clinical profile, management and the outcome. Both cases and controls were examined for respiratory syncytial virus (RSV) antibody status. The diagnosis of bronchiolitis was made on the basis of first attack of wheeze in previously healthy children below two years of age. Detailed history including the possible risk factors, the management and daily follow-up on the ward and the outcome at discharge were documented through a structured questionnaire. Chest x-ray was done in each case to find out the radiological changes. Blood of 266 patients and 30 controls were studied for RSV IgM and IgG antibody by ELISA.

Results: There were 66% male and 34% female children. The median age of the children was 3.0 months and 82.7% were below 6 months of age. Most of the babies were born term (88%), with ABW (73%), by normal vaginal delivery (88%). Exclusive or predominant breast-feeding were given in 72% cases. The location of the patient was rural in 55% cases. Around half of the parents were illiterate or slightly educated (up to 5 years of schooling) fathers 46.5% and mothers 56% and majority of the parents were poor (74%). In 52% cases the number of family members in one room were four or more. Half of the parents (52%) were smokes and there was atopy in 26.5% families. The clinical features of bronchiolitis were mostly cough (99%), respiratory distress (97%), feeding difficulty (93%) and fast breathing (96%) (median RR 68/min). Fever (100^0F or more) was in only 33% cases, though parents complained in 90% of cases. All children (100%) had wheeze and crackles in lungs in 96% cases. Liver could be palpable in 83% and spleen in 42% cases. Important radiological features were increased translucency (96%), increased interstitial markings (87%), hyperinflation (75%) and streaky densities (61%). In 69.6% cases TLC was 12,000 or less and only 15% with a neutrophil fraction greater than 60%. Children were positive for IgM antibody in 43.6% cases and both IgM and IgG in 5.3% cases. The main modalities of treatment were antibiotics (99%) (Ampicillin, 76%),oxygen therapy (83%), nebulised salbutamol (76%) and intravenous fluid (51%). The median duration of hospital stay was 4 days. Most of the children were discharged with improvement (96%) with 2% mortality. Not a single case was diagnosed as bronchiolitis in hospitals outside Dhaka. Cefrtiaxone (72.5%) and parenteral steroids (70.5%) were the mainstay of therapy there.

Conclusion: Most of the doctors are not recognizing bronchilitis and they treat the case with antibiotics in 99% cases.

Original Article *Bangladesh J Child Health 2003; Vol 27 (1): 6-9*

Radiological Evaluation of 162 Cases of Bronchiolitis

Farid Ahmed, **ARM Luthful Kabir**, Nazmul Haq

Background: Bronchiolitis is a disease of infancy. Clinically, it is difficult to differentiate it from pneumonia. Increased translucency and hyperinflation of lung fields along with increased interstitial markings, streaky densities and confluence of opacity are important radiological findings for the diagnosis of bronchiolitis.

Objective : The study was conducted to evaluate the radiological features of bronchiolitis in hospitalized infants.

Methodology: The diagnosis of bronchiolitis was made on the basis of first attack of wheeze, previous good health, preceding running nose and low grade fever. One hundred and sixty two hospitalized infants who fulfilled the inclusion criteria were selected for the study. Pattern of identifiable radiological changes in X-rays done during the acute stage was read independently by the radiologist (one of the authors) who was kept blind for clinical situation of the child. The study was conducted in the Institute of Child and Mother Health, Dhaka during November 2001 to March 2002.

Results: Important radiological features were increased translucency (96%), increased interstitial markings (87%), hyperinflation (75%) and streaky densities (61%). The associated other radiological features were consolidation (31%), collapse (16%) and ground glass opacity (10%).

Conclusion: The radiological features of bronchiolitis are increased translucency, increased interstitial markings and hyperinflation of lung fields.

Review Article *Bangladesh J Child Health 2004; 28(3): 95-99*

Proposed Guidelines for the Management of Bronchiolitis

ARM Luthful Kabir, Md Ruhul Amin, Md Abid Hossain Mollah, Selina Khanam, Sakil Ahmed, Al-Amin Mridha, Jashim Uddin Majumder, Mahfuza Shirun, Rokanuddin

Background: There had been outbreaks of bronchiolitis in Bangladesh in the recent years. The bronchiolitis proved to be due to respiratory syncytial virus (RSV).Till the development of the fact that large number of infants in this country are the victim of bronchiolitis, the diagnosis of pneumonia got upper hand to level any young child presenting with fast breathing and chest indrawing.These children are indiscriminately treated with costly antibiotics like ceftriaxone.There is fair chance of recurrent wheeze following an attack of RSV bronchiolitis and so it is important to consider the diagnosis of bronchiolitis to counsel the parents beforehand. We need to practice rational use of antibiotics in children with respiratory distress. A consensus has been developed by a group of respiratory pediatricians, senior pediatricians and Director General of Health Services (DGHS) official on the guidelines for the management of bronchiolitis.

Diagnosis of bronchiolitis

Respiratory distress preceded by coryzal symptoms with or without fever with or without wheeze in young children under 2 years of age

Important features to recognize bronchiolitis are:

- Nasal obstruction with rhinorrhoea
- Irritating cough
- Tachypnea
- Respiratory distress (mild, moderate or severe)
- Overexpanded chest
- Inspiratory crackles with or without expiratory wheeze with prolonged expiration
- Usually low grade fever (100^{o}F or less)
- Apnoea in very young preterm or LBW babies
- CXR: hyperlucency (increased darkness) hyperinflation (lungs appear bigger with low flat diaphragm)
- Leucocyte count < 15,000/ cmm
- Nasopharyngeal aspirate for RSV may be positive
- There may be recurrent attacks of wheeze after an attack of bronchiolitis

Home management (mild bronchiolitis): In 95% cases bronchiolitis is mild and home care is enough.

Home care is advised if the respiratory distress is not severe (no severe chest indrawing), the child can feed well, remains active and playful and maintains social smile.The child

should be kept with head up position, breast-feeding or other usual feeding to be continued. The child may be given oral bronchodilator, paracetamol for fever and at best oral antibiotic according to WHO guidelines if there is suspicion of pneumonia with Streptococcus pneumoniae, which is common in this age group.

Counseling: Reassurance to parents is important that the disease is not pneumonia.The child's distress is likely to improve in 4-5 days though cough may persist for next few weeks. There is fair chance of recurrent wheeze in the coming months. It is said that a portion of children who suffered from RSV bronchiolitis may suffer from asthma in future, though effective treatment of which keeps the child in near normal life.

Management of bronchiolitis in hospital

The child is to be hospitalized when develops one of the following conditions:

1. Very rapid breathing (>70/ minute)
2. Severe respiratory distress limiting normal feeding
3. Chest indrawing
4. Incessant cry signifying hypoxemia (low oxygen level in blood, oxygen saturation <94%) by pulse oxymeter
5. High temperature (> 103^{o}F)
6. Cyanosis
7. Grunting

The hospitalized child (moderate to severe bronchiolitis) should be treated with:

- Humidified oxygen preferably through nasal prongs
- Intermittent nebulisation with salbutamol should be continued after 2/3 doses (20 minutes to 4-6 hours) if the child responds well
- Intravenous fluid if oral feeding is not possible at all
- Infrequent nasopharyngeal suction in case of excessive nasal and oral secretions
- Antibiotic therapy (parenteral) is indicated in case of high fever, raised white cell count (> 15,000/cmm) and lobar infiltration on chest x-ray.

Points to ponder

Bronchiolitis is diagnosed clinically. Cough and respiratory distress preceded by runny nose in young children below 2 years with or without wheeze or fever is bronchiolitis. Bronchiolitis is a self-limiting disease. Chest x-ray shows hyperluscent and hyperinflated lung fields. Blood examination does not usually show raised white cell count. Majority of children can be managed at home ensuring feeding and oral bronchodilators. The mainstay of therapy in case of hospitalized children is adequate oxygen and nebulisation in some cases.There is no need of antibiotic therapy in all cases of bronchiolitis.There is chance of recurrent wheeze subsequently in a subset of affected children.

Original Article (Indexed) *Pakistan J Med Sci 2008; 24(5): 707-711*

Role of Antibiotic in the Outcome of Bronchiolitis

CH Rasul, **ARM Luthful Kabir,** AKMM Rashid, AA Mahboob, MA Hassan

Objective: To estimate the outcome of bronchiolitis with or without antibiotic to justify the avoidance of antibiotic.

Methodology: This was a prospective study done in Khulna Medical College Hospital during six months from October 06 to March 07. All the children below two years admitted in hospital with bronchiolitis were included in the study. The study cases were randomly assigned into one of the three groups - No Antibiotic, Oral Antibiotic and Parenteral Antibiotic. Presenting signs and symptoms were followed up thrice daily to determine the progress of disease. Outcome was estimated by the level of improvement.

Results: Sixty cases of bronchiolitis were included in this study. Most (80%) of them were below six months. The disease was frequently associated with similar problem in siblings (46.7%), noncompliance to exclusive breast feeding (38.3%) and family history of asthma (36.7%). Symptoms like sleeping difficulty and restlessness improved little earlier in No Antibiotic group. On the other hand, signs such as chest indrawing and hepatomegaly improved quicker in Parenteral Antibiotic group although the difference was statistically insignificant. Patchy opacities were found in chest x-ray in 45% cases. None of the study cases died but three of them needed special intervention. Hospital stay was shorter in No Antibiotic group (6.2±1.4) than Oral Antibiotic group (6.7±1.1).

Conclusion: General supportive therapy is highly effective in bronchiolitis and antibiotic does not influence the course of the disease.

Original Article (Indexed) *Mymensingh Medical Journal 2009, 18(1 Suppl):S50-55*

ARI situation in our country: Aren't we oblivious of bronchiolitis in Bangladesh?

ARM Luthful Kabir, Rahman AF, Rahman A

Background: ARI/pneumonia has been the leading cause of morbidity and mortality in under five children for a long time. ARI control/Integrated Management of Childhood Illness (IMCI) program have been in progress in the country for more than a decade. There have been recent reports of outbreak of RSV bronchiolitis in the country.

Objectives: This study was done to determine the causes of death and morbidity of under five children with possible explanations.

Methodology: A cross sectional national survey was conducted between January to December 2003. Twelve out of 64 districts were randomly selected. Survey was conducted in 171,366 households having 820,347 populations covering 90,357 under five children including 16,193 infants. Data were collected with three sets of forms: screening form, verbal diagnosis form and verbal autopsy form. Consensus was achieved on the diagnosis after analyzing the forms by a group of pediatricians. We also analyzed various reports on childhood morbidity and mortality of Director General of Health Services (DGHS), Bangladesh.

Results: ARI/pneumonia was found to be leading cause of under five morbidity and mortality. Most of the pneumonia deaths occurred under two years of age and it accounted for 77.5% of deaths in the first year of life. Again, children of 2-6 months of age were found to have 2.6 times higher chance of death due to pneumonia. The peak age of bronchiolitis is 2-6 months. The proportions of pneumonia deaths of children under two years were mostly in winter and spring (64.3%), the peak season of RSV bronchiolitis.

Conclusion: The cases of bronchiolitis were misclassified as pneumonia and deaths from bronchiolitis have merged with pneumonia deaths giving rise to the bulk of ARI/pneumonia deaths. The disease entity of bronchiolitis deserves its due importance as regards diagnosis, documentation, management and counseling.

Management of Bronchiolitis with or without Antibiotics – A Randomized Control Trial

Md. Jashim Uddin Mazumder, Mohammad Monir Hossain, **ARM Luthful Kabir**

Background: There has been epidemics of bronchiolitis in the recent years in Bangladesh. Bronchiolitis is mostly (95%) a viral disease in infants and young children but being treated with antibiotics in 99% of cases in our situation. Antibiotic has little role in the management of bronchiolitis. Very few randomized control trials without antibiotics in the management of bronchiolitis have so far been done.

Objectives: To evaluate the outcome of bronchiolitis with or without antibiotics in a hospital setting.

Methods: A randomized control trial was done during one winter season of 2005 with all cases of bronchiolitis attending a teaching hospital of Dhaka, Bangladesh. Sample size was selected conveniently. One hundred twenty six consecutive cases (one month up to 2 years) with clinical bronchiolitis (runny nose followed by wheeze, cough, breathing difficulty perceived by caregiver, chest indrawing and rhonchi on auscultation) who attended the hospital were enrolled in the study. Detailed history and clinical examination were done and the children were randomized into 3 groups: (1) parenteral antibiotic group, paren AB (30) treated with supportive management and IV ampicillin, (2) oral antibiotic group, oral AB (33) treated with supportive management and oral erythromycin and (3) no antibiotic group, no AB (63) treated with supportive management only. The children were managed both in indoor and outdoor but very sick patients particularly those having oxygen saturation <90% were admitted into the hospital or excluded from the study (if not agreed for hospitalization). Oxygen therapy was given to cases having oxygen saturation < 90% and IV fluid (10% dextrose in 0.225% NaCl) was given to severely distressed children. Tube feeding was given to children who were unable to take milk by mouth but not very sick deserving IV fluid. Antibiotic was given according to the protocol. All children were followed up for 23 parameters, hospitalized cases were observed 8 hourly and outdoor (OPD) cases twice in the morning and at noon. Outcome measures were breathing difficulty, feeding difficulty, social smile, fast breathing (R/R > 50/m), hypoxia (oxygen saturation <95%), wheeze, rhonchi and crepitation. Verbal consent of the parents was taken before the study. Whenever patients condition became worse with the given treatment, the children was taken out of the study and more intensive management was given. Parents were also at liberty to discontinue the treatment process whenever they wanted irrespective of the reasons.

Results: Out of enrolled 126 children with bronchiolitis 104 (82.5%) improved and were discharged safely. The improved children in different groups were as follows: paren AB 29 (27.8%), oral AB 32 (30.7%) and no AB 43 (41.3%). Total 22 cases were excluded from the study, o1 from paren AB, 01 from oral AB and 20 from no AB group. Among them 18 were OPD cases, did not turn out on regular follow up, 2 cases left hospital on DORB and 2 cases

were excluded from no antibiotic group for persistence of breathing difficulty and crepitation in the lung and treated with antibiotics. There was no death. Mean TWBC count was around 8500/cmm in all the groups. The mean value of neutrophil and lyphocytes were 33% and 61% respectively. Radiologically about 70% cases had hyperinflation, 52% cases had hypertranslucency and 56% cases had streaky densities. Hundred percent children had breathing difficulty at the time of inclusion into the study in all the groups. The decrement of breathing difficulty was gradual in all the groups and on day 5 only 27% in paren AB , 25% in oral AB and 34% in no AB group had breathing difficulty (p 0.66). About 50% children had feeding difficulty at the beginning of study in all the groups. The decrement of feeding difficulty was found rapid and similar in all the groups and there was no feeding difficulty on day-5 in all the groups. Only 34% children in paren and oral AB group and 30% in no AB group had social smile on day-1. On day-3 about 90% of children of all the groups started smiling in spite of having fast breathing and chest in drawing. About 91% children had tachypnea (RR >50/m) at the time of inclusion into the study. The decrement of fast breathing was gradual and similar in all the groups and on day five only about 10% children had fast breathing and it was equal in all the groups (p 0.05). About 54% children had hypoxia during inclusion in all the groups (p 0.49). The improvement of hypoxia was rapid and similar in all the groups and on day-5 only 6.7% had hypoxia. Hundred percent children of all groups had wheeze at the beginning of the study. The decrement of wheeze was gradual and similar in all groups. On day five total 15% children had wheeze and it was almost equal in all the groups (p 0.82). The decrement of crepitations in all the groups was also gradual. During inclusion into the study about 60% children had crepitations and it was almost equal in all the groups and on day five about 14% children had crepitations in all the groups (p 0.97).

Conclusion: The recovery of bronchiolitis managed with supportive therapy alone was found similar to those treated with combined supportive therapy and antibiotics (either oral or parenteral).

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Management of Bronchiolitis Without Antibiotics: A Multicentre Randomized Control Trial in Bangladesh

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Objective: To ascertain that antibiotics have no role in the management of bronchiolitis.

Design: Multicentre randomized control trial (RCT).

Setting: Five purposively selected teaching hospitals in Bangladesh.

Patient: Children under 24 months old with bronchiolitis.

Interventions: Children were randomized into three groups of therapeutic interventions: parenteral ampicillin (P-Ab), oral erythromycin (O-Ab) and no antibiotic (N-Ab) in adjunct to supportive measures.

Main outcome measures: Clinical improvement was assessed using 18 symptoms / signs which were graded on a two-point recovery scale of 'rapid' and 'gradual', indicating improvement within 'four days' and 'beyond four days', respectively.

Results: Each intervention group consisted of 98 ± 1 children having comparable clinico-epidemiological characteristics at the baseline. The trial revealed that most chesty features (features appearing to arise from chest, i.e. cough, breathing difficulty, wheeze, chest indrawing, tachypnoea, tachycardia, rhonchi and crepitation) demonstrated a gradual recovery, beyond 4th admission day and, not differing among the three intervention groups ($p > 0.23$, $p < 0.62$, $p = 0.54$, $p < 0.27$, $p = 0.75$, $p = 0.76$, $p = 0.81$, $p > 0.98$, respectively). Most non-chesty features (features appearing to arise away from chest, i.e. feeding / sleeping difficulties, social smile, restlessness, inconsolable crying, nasal flaring, fever and hypoxaemia) demonstrated a rapid recovery, within 4 days, remaining comparable among the three intervention groups ($p < 0.07$, $p = 0.65$, $p = 0.24$, $p < 0.61$, $p = 0.22$, $p = 0.84$, $p = 0.29$ and $p = 0.96$, respectively). However, nasal symptoms (runny nose and nasal blockage) also showed no difference among groups ($p = 0.36$ and $p = 0.66$, respectively). Thus, the dynamics of clinical outcome obviates that children not receiving antibiotics had similar clinical outcome than those who did.

Conclusion: In hospital settings, managing bronchiolitis with only supportive measures but without antibiotics remains preferable.

Keywords: Bangladesh, Bronchiolitis, Multicentre RCT, No antibiotics

Introduction

Bronchiolitis remains a major public health problem throughout the world exerting significant morbidity and mortality (1). Bronchiolitis due to Respiratory syncytial virus (RSV) remains a significant cause of respiratory disease all over the world, including South-East Asian countries like India (2) and Pakistan (3).

While proportional morbidity due to respiratory diseases among the infants remains 45% (4), epidemic of bronchiolitis was first reported from Bangladesh during 2001–2002 (5). This high rate continued to prevail over the next five years (6). In a recent study, we found that 21% of children under five years of age who attended different hospitals had bronchiolitis (7). Nearly 95% of bronchiolitis cases are of viral origin, RSV being the commonest (8,9), including our different observations of 50% (10) to 91% (11).

However, it was observed that bronchiolitis has been misdiagnosed as pneumonia in per-urban/outskirts of Dhaka city. This has resulted in a high proportion of indiscriminate use of wide-spectrum antibiotics, such as ceftriaxone, a third generation cephalosporin. Ceftriaxone is being recommended in as much as 70% cases (10), despite the fact that the vast majority of Bangladeshi people live in hard core poverty with a very low per capita gross national income (GNI) of only 480 US$ (12).

Forms of treatment for bronchiolitis range from home care management (in milder cases) (13) and oxygen therapy (14) to care of severe cases by employing measures (15) such as nebulized salbutamol, adrenaline, corticosteroids, aerosolized ribavirin, hypertonic saline (16) and critical management in paediatric intensive care unit (PICU) (13). However, antibiotics remain a common practice in treating bronchiolitis (10), despite the rare likelihood of bacterial infection (17,18). The low rate of serious bacterial complication and secondary infections precludes the use of antibiotics. Using antibiotics increases the treatment cost and facilitates bacterial resistance (19).

Taking into account the previously stated facts/statistics and the observation that only one randomized control trial (as a standard research) has been conducted so far since 1966 (20) as reported in a recent review by Cochrane database (21), this therapeutic trial was conducted to confirm that antibiotics are not required in the management of clinical bronchiolitis.

Materials and Methods

Set up and organization of project/study areas

This year-long randomized control trial (RCT) was conducted in five purposively selected teaching hospitals / medical college hospitals (MCH) which were homogenic (in terms of service delivery and medical education) selected from three diverse regions / districts which were heterogenic (in terms of socio-economic norms & health care seeking patterns).

Sampling frame

Total sample size

The sample size was estimated to be 327 following the Statcalc of EPInfo software version 6 [Center for Disease Control and Prevention (CDC), Atlanta, GA, USA]. However, we could analyze 295 children finally.

Inclusion criteria

Any child under two years of age, both male and female, who were hospitalized due to preceding or existing runny nose, cough, breathing difficulty, chest indrawing and rhonchi on auscultation (13,21).

Exclusion criteria

To avoid probable confounding factors which might affect the outcome, children with atopic conditions, congenital heart disease, possible immuno-deficiency, chronic lung problem, associated infection and receiving antibiotics previously were excluded.

Randomization of children for therapeutic intervention

Following random table, 295 children were allocated into three therapeutic intervention groups receiving:

(i) parenteral ampicillin at 50 mg/kg/dose 6 hourly I.V. (P-Ab)

(ii) oral erythromycin at 10 mg/ kg / dose 6 hourly (O-Ab) considering Mycoplasma pneumoniae (8) and

(iii) no antibiotics (N-Ab).

Supportive therapy constituted following Bangladeshi national guidelines (22) with 6 hourly nebulized salbutamol at 0.15 mg/ kg / 6–8 hourly, O2-inhalation (if SaO2 < 90%), maintenance of nutrition with 10% I.V. dextrose in 0.225% saline, nasogastric tube feeding or breast feeding (as required per case), oro-pharyngeal suction SOS and paracetamol suspension (if fever persisted).

Follow up

Follow up was conducted by trained doctors with each child, every 8 h over four to seven days using a structured sheet based on nine symptoms (cough, runny nose, breathing difficulty, feeding difficulty, social smile, restlessness, inconsolable cry, sleeping difficulty and nasal blockade) and nine signs (wheezing, chest indrawing, nasal flaring, fever, tachypnoea (>50 breaths / min), tachycardia (>120 beats /min), rhonchi, crepitation and hypoxaemia (SaO2 < 90%) by pulse oxymeter (Nonin Medical Inc., Plymouth, MN, USA).

The antibiotic therapy was planned for 7 days and in case of early discharge, the parents were advised to complete the course at home. Clinical improvement (if recovered in >90% of each group) was assessed on a two-point recovery scale of 'rapid' and 'gradual'. These were defined by the number of days in which improvement occurred, either within four days or beyond, respectively. As the remaining three clinical features of convulsions (only 1%), cyanosis (7.5%) and impaired consciousness (5%) were observed among fewer subjects (10% in each group) and improved on the day of admission, these were beyond the scope of follow up.

Discharge criteria as per our national guideline (22) were also based on satisfactory feeding, return of social smile and no hypoxia (SaO2 > 94%) in room air. However, to comply with Geneva convention, when condition seemed precarious, children were discharged from the study and referred to near-by tertiary care institutions as all our five study hospitals lacked PICU; others were discharged on risk bonds when parents opted for.

Data management

Manually verified data ran for logical sequences were analyzed using 'SPSS /Win v.12.5' (SPSS Inc., Chicago, IL, USA) employing necessary statistical tools (by expert

programmer- cum-data analyst). Chi-square tests were performed for larger sets of numbers, while Fisher's exact test was used for smaller sets to compare proportions including likelihood ratio, linear association and correlations analysis (Pearson's &/ or Spearman's-rho) to examine possible association / relationships between >2 variables. Further, Student's t-tests and Correlation of Co-efficient /ANOVA tests were also performed to compare mean values of ‡2 sets of continuous variables. A p-value of <0.05 (at 95% CI) was considered as significant.

Ethical implications

During the study, ethical considerations were taken into account at every stage. Anonymity of children and confidentiality of medical records were ensured. Written informed consent was secured from mothers or guardians, the risk / benefit of drawing blood or conducting X-rays or oxymetry was properly detailed to the parents, including their liberty of withdrawing child from the study at any point (approved by the Ethical Review Committee, Bangladesh Medical Research Council).

Results and Findings

Initially, 441 children with bronchiolitis were assessed for eligibility. Finally, 327 children were recruited for the study based on fulfilling of the inclusion criteria.

Baseline selected clinico-epidemiological parameters

Out of enrolled 327 hospitalized infants and children with bronchiolitis, 295 (90%) were studied revealing a drop out rate of 10% (n = 32). Seventeen (5%) children were referred to tertiary care having PICU and data of 15 (4.5%) were deleted from database as their parents either withdrew their children from the study or left respective hospitals on risk bonds.

Each of three intervention groups (P-Ab, O-Ab and NAb) comprising 98 ± 1 children had a comparable baseline characteristics of age, gender and haematological and radiological features (Table 1). The cases were also similar in terms of severity, particularly feeding difficulty, nasal flaring, tachypnea and hypoxaemia (Table 2).

Dynamics of improvement in clinical symptoms and signs

More than 90% of all 295 children having symptoms and signs of clinical bronchiolitis: cough, runny nose, breathing difficulty, chest indrawing and rhonchi on admission, recovered within five to seven days, not differing significantly among intervention groups ($p > 0.23$, $p = 0.36$, $p < 0.62$, $p < 0.27$, and $p = 0.81$, respectively). On the other hand, 218 (74%) with feeding difficulty, 146 (50%) with restlessness, 103 (35%) with inconsolable crying, 186 (63%) with sleeping difficulty and 216 (73%) with no social smile recovered within three days on an average, which also did not differ among groups ($p < 0.07$, $p < 0.61$, $p = 0.22$, $p = 0.65$ and $p = 0.24$, respectively) (Table 3). Recovery of nasal blockage (recovered 5 days) also did not differ among groups ($p = 0.66$).

Moreover, 87% children (on an average) who displayed signs such as wheeze (n = 272, 92%), tachypnoea (n = 265, 90%), tachycardia (n = 260, 88%) and crepitation (n = 233, 79%) recovered within about seven days on average, which did not differ significantly among groups as well ($p = 0.54$, $p = 0.75$, $p = 0.76$ and $p = 0.98$, respectively). Contrarily, 54%

children with nasal flaring (n = 160) and 27% with hypoxia (n = 80) on admission recovered within three days only, revealing a comparable statistics among groups (p = 0.84 and p = 0.29, respectively) (Table 4). Seventy-five percent of cases had no fever, with low grade fever documented in only 25% cases, which showed improvement in two days time. The recovery rate did not differ among groups (p = 0.96) (Table 4).

Rapid or gradual improvement in clinical parameters

Thus, cumulative findings of Tables 3 and 4 on clinical improvement revealed that all chesty features, such as cough, breathing difficulty, wheeze, chest indrawing, tachypnoea, tachycardia, ronchi and crepitation, demonstrated a gradual recovery after the 4th admission day. This finding did not differ among three intervention groups (p > 0.23, p < 0.62, p = 0.54, p < 0.27, p = 0.75, p = 0.76, p = 0.81 and p = 0.98, respectively). Contrary to chesty, most nonchesty features such as feeding and sleeping difficulties, no social smile, restlessness, inconsolable crying, nasal flaring, hypoxaemia and fever demonstrated rapid recovery, i.e. within four days, which also remained comparable among groups (p < 0.07, p = 0.65, p = 0.24, p < 0.61, p = 0.22, p = 0.84, p = 0.29 and p = 0.96, respectively). However, non-chesty features of nasal origin such as runny nose and nasal blockage improved gradually, after four days, and also showed no difference among groups (p = 0.36 and p = 0.66, respectively).

Table 1

Baseline characteristics of selected clinico-epidemiological parameters

Clinico-epidemiological parameters studied		Children from 3 intervention groups (n=295,100%)			p-
on admission to compare (n = 295, 100%)		P-Ab (99)	O-Ab (99	N-Ab (97)	value
Age (in months)	£3 (n = 106, 35.9%)	38	36	32	0.66
(Proportional gps	4–6 (n = 105, 35.5%)	33	39	33	
	7–12 (n = 63, 21.4%)	23	17	23	
	13–18 (n = 16, 5.4%)	04	04	08	
	19–24 (n = 5, 1.7%)	01	03	01	
Gender	Male 214 (72.5%)	2.96:1	3.30:1	1.93:1	0.20
	Female 81 (27.4%)				
	Male female ratio = 2.64:1				
Haematological	Hb (g/dL) mean (9.85 ± 5.26)	10.44 ± 9.01	9.61 ± 1.35	9.49 ± 1.21	0.44
profiles	WBC (cmm) mean (10 717 ± 5181)	11102 ± 5747	10889 ± 6474	10 126 ± 2127	<0.42
	Polymorphs (44.4 ± 16.90)	44.9 ± 16.7	45.32 ± 16.8	42.76 ± 17.40	0.56
	Lymphocytes (50.7 ± 16.8)	50.20 ± 16.24	49.9 ± 16.74	52.11 ± 17.54	>0.70
Radiological	Increased translucency: 79.8%	81.7%	80.5%	77.4%	0.67
features	Hyperinflation : 75.8%	72.7%	78.5%	76%	>0.55
	Increased interstitial marking: 60.5%	56.5%	62.6%	62.4%	>0.51
	Streaky densities: 59.9%	61.7%	57.4%	60.4%	<0.77

Table 2

Severity features of bronchiolitis cases

Clinical features	P-Ab (99)	O-Ab (99)	N-Ab (97)	p-value
Feeding difficulty (218, 74%)	73.7%	73.7%	74.2%	0.99
Nasal flaring (160, 54%)	50.0%	55.6%	57.7%	0.54
*Tachypnoea (265, 90%)	89.9%	87.9%	91.8%	0.67
**Hypoxaemia (80, 27%)	24.2%	28.3%	28.9%	0.76

*Tachypnoea, respiratory rate > 50/min; ** hypoxaemia, SaO2 < 90%

The mean length of stay (LOS) in hospitals was 4.14 ± 1.79 days. However, children belonging to N-Ab group stayed for significantly less days (3.7 ± 1.5) than their counterparts of P-Ab (4.3 ± 1.9) or O-Ab (4.4 ± 1.9) did ($p < 0.001$) (Table 3).

Table 3

Comparison in the outcome of clinical bronchiolitis based on 9 clinical symptoms in 3 intervention groups symptoms studied

Different clinical Symptom studied	Children having clinical symptom on admission	Proportion of children (<10%) not improved on specified days: Yet to recover	hospital day	P-Ab	O-Ab	N-Ab	p-value	Recovery type
Cough	n = 295, 100%	n = 22 (7.5%)	On day 7	10	9	3	>0.23	Gradual
Runny nose	n = 295, 100%	n = 09 (3.1%)	On day 5	2	5	2	0.36	Gradual
Breathing difficulty	n = 295, 100%	n = 19 (6.4%)	On day 7	8	9	2	<0.62	Gradual
Feeding difficulty	n = 218, 74%	n = 18 (6.1%)	On day 4	1	0	6 2	<0.07	Rapid
Restlessness	n = 146, 50%	n = 14 (4.7%)	On day 2	5	6	3	<0.61	Rapid
Inconsolable cry	n = 103, 35%	n = 6 (2.0%)	On day 2	1	4	1	0.22	Rapid
Sleeping difficulty	n = 186, 63%	n = 10 (3.4%)	On day 3	4	2	4	0.65	Rapid
Nasal blockade	n = 173, 59%	n = 16 (5.4%)	On day 5	6	6	4	0.66	Gradual
No social smile	n = 216 (73%)	n = 23 (7.7%)	On day 4	10	9	4	0.24	Rapid
Hospital stay Mean: 4.14 ± 1.79 days	n = 295, 100%	Discharged on complete recovery with advices		4.29 ± 1.89	4.44 ± 1.93	3.67 ± 1.45	t = 39.52, p < 0.001	

Table 4

Comparison in the clinical outcome of bronchiolitis based on 9 clinical signs in 3 intervention groups

Different clinical signs studied	Children with clinical signs on admission	Proportion of children (<10%) not improved on specified days: Yet to recover	hospital day	P-Ab	O-Ab	N-Ab	p-value	Recovery type
Wheeze	n = 272, 92%	n = 21 (7.1%)	On day 7	8	9	4	0.54	Gradual
Chest indrawing	n = 295, 100%	n = 22 (7.5%)	On day 6	8	10	4	<0.27	Gradual
Nasal flaring	n = 160, 54%	n = 22 (7.5%)	On day 2	8	8	6	0.84	Rapid
Tachypnoea	n = 265, 90%	n = 19 (6.4%)	On day 6	8	7	4	0.75	Gradual
Tachycardia	n = 260, 88%	n = 17 (5.8%)	On day 7	7	8	2	0.76	Gradual
Rhonchi	n = 295, 100%	n = 25 (8.6%)	On day 7	9	1	2 4	0.81	Gradual
Crepitation	n = 233, 79%	n = 19 (6.4%)	On day 7	7	9	3	0.98	Gradual
Hypoxaemia (<90%SaO2)	n = 80, 27%	n = 14 (4.7%)	On day 2	2	6	6	0.29	Rapid
Fever (100–102°F)	n = 74, 25%	n = 15 (5.0%)	On day 2	5	6	4	0.96	Rapid

Discussion

Designing the study for RCT Our study provides strong evidence that antibiotics are not necessary for the management of bronchiolitis.

This study is a well-designed pragmatic trial, sufficiently large in its multicentre RCT approach, which covered five centres. A recovery scale in clinical improvement was graded into two logical outcomes: 'rapid' and 'gradual' scales.

Thus, data from this RCT generated ample valuable information which makes one confident that antibiotics are not required in the management of bronchiolitis as the sample size was adequate (n = 295), 98 ± 1 cases in each study group, in particular. Moreover, the five of our study places, though selected purposively, had heterogenic characteristics making it epidemiologically sound and statistically accurate.

Furthermore, instead of studying only two groups, comprising either administered antibiotics or not, in addition to supportive measures, we added a third group by splitting antibiotic group into 'oral' and 'parenteral'. This was carried out to ensure that as many influencing factors were addressed as possible. Additionally, the follow up conducted to document the clinical improvement for a week (or less in case of subjects who improved earlier), involving 8 hourly clinical checkup and using as much as 18 symptoms / signs, signifies added strength to this study.

As there are no large-scale studies in the existing literature evaluating the use of antibiotics, they are considered useless for acute bronchiolitis. However, there is still a substantial misuse of antibiotic prescriptions in certain populations.

The few small-scale studies, which demonstrate that antibiotics are not necessary in the management of bronchiolitis, feature some limitations. It is worth mentioning four studies. The first study was conducted four decades ago by Field et al. (20), a two-armed trial with ampicillin and placebo in one hospital with 44 children to assess the progress using eight clinical features (pulse rate, temperature, respiratory rate, use of accessory muscles of respiration, expiratory wheeze, adventitious sounds and cyanosis).

Friis B (23) conducted a study 26 years ago, with 136 children between 1 month and 6 years of age as participants. Majumder et al. (24) recently conducted another study involving 104 children. While the study was conducted in one hospital, it was done across three groups: one received ampicillin, the other erythromycin and one group received no antibiotics. The most recent study was conducted on infants and young children with RSV lower respiratory tract disease. The study revealed that the duration of hospitalization did not differ, regardless of whether the patients were treated with azithromycin or a placebo (25).

However, a recent study, a double-blinded, placebo-controlled, randomized trial, demonstrated evidence that clarithromycin had significant improvements on clinical outcome and laboratory findings of RSV bronchiolitis. This, however, may have been due to anti-inflammatory effect of the antibiotic. This study nevertheless suffered from the following limitations: the sample size was too small (only 21 infants) and it was conducted in only one hospital (26).

Data generated from this study may not be sufficient enough to conclude that antibiotics have a role in treating clinical bronchiolitis.

Antibiotics are usually prescribed in RSV bronchiolitis cases when there is: (a) a suspected secondary bacterial infection, (b) an intention to achieve anti-inflammatory or

immuno-modulatory effect and (c) an intention to prevent serious bacterial infection. It has been demonstrated that RSV effect on ciliated respiratory epithelia enhances susceptibility to secondary infections. However, the risk of secondary infections in infants and children with RSV bronchiolitis is remarkably low (18). If the intention is to reduce the inflammatory process, there would be no place for ampicillin, as there is no evidence that penicillin derivatives or ampicillin have immuno-modulatory properties.

The diagnosis of bronchiolitis is most often made on clinical grounds and the criteria may vary: very simply, the first attack of wheezing in a previously healthy child of less than two years of age (10) or for a diverse criteria with coryzal symptoms followed by rapid onset of wheeze, fever, tachypnoea, chest retractions, crepitation, ronchi with radiographical evidence of chest-hyperinflation (27). However, we adopted a midline as the diagnostic criteria for bronchiolitis (runny nose followed by breathing difficulty, chest indrawing and rhonchi (on auscultation) in less than two-year-old children). Moreover, haematological (10) and radiological profiles of our study cases remained consistent with others' findings (28).

Clinical management of bronchiolitis: is antibacterial therapy necessary?

The answer is no. As with the previously listed studies, findings from our research provides evidence that antibiotics do not influence the natural course of bronchiolitis in terms of recovery (20,23,25). Furthermore, children who did not receive antibiotics had a significantly shorter hospital stay ($p < 0.001$). The reason might be at least twofold: firstly, the poor parents tend to continue antibiotic course like other parents having fascination with antibiotics (29) for their children even if their children fulfilled the discharge criteria. Secondly, the parents did not want to keep their children in hospital any more when their child's condition improved but not receiving any antibiotics. There remains scope to change the existing guideline for the management of bronchiolitis (21) in the light of the findings of this study. As a result, the universal practice of prescribing antibiotics in bronchiolitis may be significantly reduced as observed in other country (30).

Evidence-based findings on the dynamics of clinical improvement

The research revealed the following details on the recovery rates of the children:

i) chesty features: had gradual recoveries, not differing among three intervention groups and,

ii) most non-chesty features: resolved rapidly and were comparable among three intervention groups, except for runny nose and nasal blockage. Moreover, children belonging to N-Ab group stayed for fewer days in hospital than their counterparts of P-Ab or O-Ab group.

Knowing the rate of recovery of different clinical features in bronchiolitis bears several important implications. For example, rapid return of social smile, being able to take food and not requiring oxygen any longer provide opportunity of a more speedy turnover in respective hospitals, particularly in the given situation of Bangladesh where persons per hospital bed remain as much as 2732 (9). There is also scope to counsel parents that chesty features, such as cough or wheeze, are likely to persist for a longer period in spite of improvement of other symptoms and a longer hospital stay is not necessary.

Limitations of the study include: (i) not assessing the RSV status, (ii) not being a double-blind study (due to fund constraints) and (iii) parental desire of not keeping their children for more than seven days in the hospital as they improved sooner.

Conclusion

Managing acute bronchiolitis without antibiotics in adjunct to supportive measures remains preferable as clinical outcomes (recovery rates) were similar to those of cases receiving antibiotics. Moreover, the recovery was 'gradual' in cases of chesty features in contrast to 'rapid' recovery of most of the non-chesty features.

What is already known on this topic?

Role of antibiotics in bronchiolitis management was still indecisive, four studies supported the fact that there was no role of antibiotics in management of bronchiolitis and one study demonstrated the role of clarithromycin. All these studies were conducted in a single hospital with small sample size (21–136) using two-armed study design.

What this study adds?

Management of bronchiolitis among younger children is possible using only supportive measures in hospital setting even in a low-income country context.

This was a multicentre study with large sample size (327), having three arms, comparing parenteral, oral and no antibiotics.

Outcome measures included 18 clinical features and length of hospital stay. The dynamics of improvement of 'chesty' and 'non-chesty' clinical features were also measured.

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Bronchiolitis: An Update

Md. Jashim Uddin Mazumder, **ARM Luthful Kabir**, Wahida Khanam, Al-Amin-Mridha, Nihar Ranjan Sarker, Md. Shahidul Haque, Subhasish Das

Introduction

Bronchiolitis is a common acute contagious respiratory illness of infants and young children involving the lower respiratory tract. Bronchiolitis is an active area of research, and many important studies have advanced the understanding of this disorder in the past few years. This review, focused on new developments in the scientific evidence that relate to the definition, epidemiology, aetiopathogenesis, diagnosis, and treatment of bronchiolitis.

Definition

Definitions of bronchiolitis vary and may account for some of the variability in the clinical evidence derived from published studies. In the United Kingdom, the term tends to be used more specifically. The authors of University of Nottingham study derived a consensus definition of "a seasonal viral illness characterized by fever, nasal discharge, dry and wheezy cough. On examination, there are fine inspiratory crackles and/or high-pitched expiratory wheeze. The American Academy of Pediatrics (AAP) guideline defined bronchiolitis as "a constellation of clinical symptoms and signs including a viral upper respiratory prodrome followed by increased respiratory effort and wheezing in children less than 2 years of age. According to the national guideline of Bangladesh, bronchiolitis is a clinical diagnosis characterized by cough and respiratory distress associated with wheeze, preceded by runny nose with or without fever in young children below 2 years of age particularly between 2-6 months of age.

Epidemiology

The incidence of bronchiolitis has been shown to be as high as 11 cases per 100 children per year of both the first and second 6 months of life. In the majority of infants with bronchiolitis, the illness is mild, but approximately 1%-5% requires hospitalization, of this respiratory failure develops in 3%-7% and 1% die.

Risk factors

Bronchiolitis is more common in male, in those who have not been breast-fed, and in those who live in crowded conditions. Passive smoking, particularly maternal smoking, and wood burning stoves have higher risk. Risk factors for severe disease and or complications are: prematurity (<37 weeks), low birth weight, age less than 12 weeks, chronic lung disease (e.g. cystic fibrosis, bronchopulmonary dysplasia), congenital heart disease with left to right shunt, neurological disease with hypotonia and pharyngeal dis-coordination, immunocompromise, congenital defects of the airways and Down's syndrome.

Etiology

RSV continues to account for 50% to 80% of cases. Other causes include the parainfluenza viruses- primarily parainfluenza type 3, influenza, and human metapneumovirus (HMPV). HMPV has been estimated to account for 3% to 19% of bronchiolitis cases. Rates of co-infection have ranged from 10% to 30% in samples of hospitalized children, most

commonly with RSV and either HMPV or rhinovirus. Certain adenoviruses can causes a severe bronchiolitic illness with pneumonia. These can damage small airways and lead to bronchiolitis obliterens and bronchiectasis. The role of rhinoviruses in bronchiolitis is unclear because of their well-documented role in triggering exacerbations of wheezing among older children with reactive airway disease or asthma.

Pathogenesis and Pathophysiology

RSV virus spreads from the upper respiratory tract to lower respiratory tract within a few days, resulting in inflammation of the bronchiolar epithelium, with peribronchial infiltration of white blood cell types, mostly mononuclear cells, and edema of the submucosa and adventitia. Plugs of sloughed, necrotic epithelium and fibrin in the airways cause partial or total obstruction to airflow. The degree of obstruction may vary as these areas are cleared, resulting in rapidly changing clinical signs that confound an accurate assessment of the severity of illness. A 'ball-valve' mechanism can result in trapping of air distal to obstructed areas, with subsequent absorption, atelectasis, and a mismatch of pulmonary ventilation and perfusion that may lead to hypoxemia. Atelectasis may be accelerated by the lack of collateral channels in young children and potentially by the administration of high concentrations of supplemental oxygen, which is absorbed more rapidly than room air. Smooth-muscle constriction seems to have little role in the pathologic process, which may explain the limited benefit of bronchodilators observed in clinical studies.

Symptoms and Signs

Bronchiolitis usually starts with a two to three days prodromal phase of coryzal symptoms. Other symptoms and signs include cough, rapid respiratory rate, hyperinflation, wheeze and crackles. Fever does not always occur but if present it is usually low grade (less than 39°C). Absence of fever dose not preclude a diagnosis of bronchiolitis. A recent consensus guideline from the UK defined bronchiolitis as a seasonal viral illness characterized by fever (not always present), nasal discharge and dry wheezy cough. Cough is usually dry and wheezy and along with nasal symptoms, which is one of the earliest symptoms to occur in bronchiolitis. On examination, there are fine inspiratory crackles and or high pitched expiratory wheeze. In a recent study in 5 teaching hospitals of Bangladesh among 295 cases, following clinical features were noted.

Symptoms	(%)	Signs	(%)
1. Cough	100	1. Chest indrawing	100
2. Runny nose	100	2. Rhonchi	100
3. Breathing difficulty	100	3. Wheeze	92
4. Feeding difficulty	74	4. Tachypnea	90
5. No social smile	73	5. Tachycardia	88
6. Inconsolable cry	65	6. Crepitation	79
7. Sleeping difficulty	59	7. Nasal flaring	54
8. Restlessness	50	8. Hypoxemia (<90% SaO2)	27
		9. Fever	25

Assessment of severity of bronchiolitis

Bronchiolitis can be assessed as mild, moderate or severe (Table 1)

Table-I

Severity assessment of bronchiolitis

Parameters	Mild	Moderate	Severe
Respiratory rate	<2 month >60/min 2-12 month >50/min	>60/m	>70/m
Chest wall indrawing	None/mild	Moderate	Severe
Nasal flare and or grunting	Absent	Nasal flare possible, grunting absent	Present
Feeding	Normal	Less than usual, frequently stops,quantity> half of normal	Not interested, choking, quantity < half of normal
Behavior	Normal	Irritable	Lethargic
Cyanosis	Absent	Absent	Present

§Adapted from New Zealand guide line

Investigations

Measurement of oxygen saturation by pulse oximetry is widely used to see the oxygen saturation level in blood. CBC should be done to exclude bacterial infection and to see hemoglobin level. Chest x-ray findings are wide from normal to increased translucency (79.8%), hyperinflation (75.8%), increased interstitial marking (60.5%) and streaky densities (59.9%). Blood gas analysis is done to look into respiratory acidosis and hypercapnea. Nasopharyngeal aspirates (NPA) can be tested directly for RSV antigen/antibody within few hours by ELISA or immunofluorescence. In a study conducted in Bangladesh RSV antibody (IgM) was found in 43.6%. Serum electrolytes, osmolality and urinary osmolality can also be done to detect the effect of inappropriate secretion of anti-diuretic hormone. Blood culture and urine culture is some times needed to exclude concomitant bacterial infection. Authors of one study documented a low but insignificant rate of bacterial infection accompanying RSV infection, mostly in the urinary tract. Low rates of co-infections also have been observed in recent studies only on the basis of the clinical diagnosis of bronchiolitis. In a prospective pediatric office based study of 218 febrile infants younger than 3 months of age with clinically diagnosed bronchiolitis, no serious bacterial infections were identified.

Diagnosis

In community based studies, the criteria for defining bronchiolitis have included a physician's diagnosis and the first episode of wheezing in a previously healthy child of less than 2 years of age. Investigations with the exception of oximetry, are not routinely indicated in the diagnosis or in determining the severity of bronchiolitis. CBC, ESR and CRP are not reliable predictors of disease severity and are not helpful for between bacterial and viral infection. The use of chest radiography for diagnosis and management of bronchiolitis has also varied widely and is not recommended routinely by the AAP.

Differential diagnosis

The conditions most commonly confused with acute bronchiolitis are pneumonia and asthma. Clinically, bronchiolitis and pneumonia are sometimes indistinguishable. But the history of runny nose, low-grade fever, wheeze, non-toxic look, rhonchi, normal CBC, and increased translucency and hyperinflation on chest x-ray favor the diagnosis of bronchiolitis. Asthma and bronchiolitis may not be distinguishable during the first episode, but repeated episodes of wheezing, absence of viral prodrome and presence of a family history of asthma/ atopic conditions points to the diagnosis of asthma. Other entities that may be confused with bronchiolitis include foreign body in the trachea, tracheo or bronchomalacia, vascular rings, congestive heart failure, cystic fibrosis, or pertusis.

Treatment

The management of bronchiolitis in primary care is focused on providing support and information to parents or caregivers. Bronchiolitis can be managed both at home and hospital according to the severity of illness. In the first 72 hours of the illness, infants may get worse before starting to improve. An infant who is seen early in the course of the illness may need to be reassessed to check for any detorioration. Parents and caregivers of infants who have been assessed as to have mild illness and where symptoms have been present for more than 72 hours, need only reassurence. Infants with severe symptoms or who deteriorate may require referral for consideration of oxygen, nasogastric feeding, intravenous fluids and PICU care. Refer all infants with:

Respiratory rate >70/m, nasal flare and grunting, history of apnea, poor feeding, lack of interest, choking, less than usual fluid intake in the preceding 24 hours, lethargy, severe chest wall recession, cyanosis.

The threshold for referral to hospital should be lowered in infants lees than 2 months of age or those born less than 32 weeks of gestation and infants with cardiac and respiratory co-morbidities (e.g. chronic lung disease, congenital heart disease).

Home management

Supportive measure:

According to national asthma guideline of Bangladesh homecare management is advised for mild bronchiolitis. It includes only supportive care:

- Head up position at an angle of 30^{o}-40^{o}
- Normal feeding (breast or other feeding)
- Cleaning of nose with normal saline drops
- Bathing with lukewarm water
- Paracetamol suspension for fever

Return to doctors/hospital if the child:

- Becomes toxic
- Develops high fever
- Has feeding difficulty

Hospital Management

Supportive measures- same as home care and

- Correction of dehydration (if any) by supplementation of oral fluid intake or replaced by parenteral fluids.
- Correction of electrolyte imbalances by suitable intravenous solutions.
- Maintenance of nutrition by oral or N-G tube feeding.

Specific measures

O_2 therapy: Humidified oxygen inhalation. (pulse oximetry, if available, is the best predictor of the severity of the disease and need for oxygen)

Indication for O_2 therapy

Central cyanosis, not able to drink/ breast feed, restlessness, severe chest indrawing, RR>70/min, apnea, grunting

Ribavirin: Ribavirin, an antiviral agent administered by aerosol, has been used for infants with congenital heart disease or chronic lung disease. There is no convincing evidence of a positive impact on clinically important outcomes such as mortality and duration of hospitalization.

Antibiotics: Antibiotics do not influence the natural course of bronchiolitis in terms of recovery. But antibiotic therapy may be initiated according to WHO guideline for pneumonia if the child is toxic, febrile and shows high leucocyte count (>15000/cmm) and lobar infiltrate on chest radiography.

Controversial management

Bronchodilators: Bronchodilators may produce short term improvements in clinical scores but have never been shown to affect any important clinical outcome, such as obviating the need for ventilation or reducing inpatient stay. The available current evidence continues to support the AAP recommendation against the routine use of bronchodilators for bronchioliti8.

Corticosteroids: Two randomized control trials showed no evidence of benefit for inhaled corticosteroids in acute bronchiolitis. The Cochrane review showed no evidence of benefit for systemic steroids. One trial found that a single injection of dexamethasone may help in acute bronchiolitis but another larger firmly shows that oral dexamethasone is not useful.

Leukotrine receptor antagonist (montelukast): did not seem to be beneficial in resolution of symptoms.

Nebulized hypertonic saline: A recent randomized trials and in a Cochrane meta-analysis shows improvement in clinical score and duration of hospitalization.

Physiotherapy: It is generally recommended, that children with acute bronchiolitis should have minimal handling and are not given chest physiotherapy. There are, however, no randomized placebo-controlled studies available. In Switzerland, a third of pediatricians reported prescribing physiotherapy on a regular basis for inpatients and an additional 49% did so sometimes.

Counseling

There is scope to counsel the parents that bronchiolitis is not pneumonia and some clinical features such as cough or wheeze likely to persist for a longer period in spite of improvement of other symptoms. There is a higher incidence of wheezing and asthma in children with a history of bronchiolitis. It is unclear whether bronchiolitis incites an immune response that manifests as asthma later or whether those infants have an inherent predilection for asthma that is merely unmasked by their episode of RSV. Approximately 60% of infants who wheeze will stop wheezing.

Prevention

Pooled hyperimmune RSV intravenous immunoglobulin (RSV-IVIG, RespiGam) and palivizumab an intramuscular monoclonal antibody are effective in preventing severe RSV disease in high risk infants when given before and during RSV season. Palivizumab is recommended for infants younger than age two year with chronic lung disease (Bronchopulmonary dysplasia) or prematurity.

Course and prognosis

During the first 48-72 hours after onset of cough and dyspnea, the infant is at highest risk for further respiratory compromise; he or she may be desperately ill with air hunger, apnea and respiratory acidosis. The case fatality rate is less than 1%, with death attributable to apnea, uncompensated respiratory acidosis or severe dehydration. Some features (chesty) gradually recover like cough, runny nose, breathing difficulty, nasal blockade, wheeze, chest indrawing, tachypnoea, tachycardia, ronchi and crepitation. They usually persist 5-7 days. Other features (non-chesty) like feeding difficulty, restlessness, inconsolable cry, sleeping difficulty, social smile, nasal flaring, hypoxemia, undergo rapid recovery within 2-4 days. In one study of ambulatory children in South Africa, the median duration of symptoms was 12 days. Infants with conditions such as congenital heart disease, broncho-pulmonary dysplasia and immunodeficiency often have more severe disease with higher morbidity and mortality.

Conclusion

Bronchiolitis continues to be an active area of investigation across the spectrum from genetic mechanisms to population-based research. Surveillance studies continue to identify new causes of bronchiolitis and explore the role of viral coinfections. Further investigation is needed to explore the combination of therapies and other interventions such as nebulized hypertonic saline.

Magnitude of the Respiratory Disorders in Under Five Children Attending the Upazila Hospitals of Bangladesh

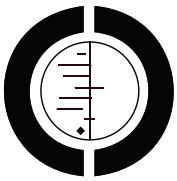
Mohammad Rezaul Haque, **ARM Luthful Kabir,** Sonia Jesmin, Nasir Uddin, Md. Abidul Haque, Sadeque Hasan, Md Jashim Uddin Mazumder, Md. Delwer Hossain, MA Mannan

Objective : This cross sectional study was conducted to find out the magnitude of respiratory disorders in under five children in different upazila hospitals in Bangladesh.

Methodology: Twelve upazila hospitals were randomly selected from all six divisions of Bangladesh. Data were collected from all children who attended outdoor patient department (OPD) and hospitalized into indoor patient department (IPD) on the day of visiting the hospitals as regards to number of children, clinical diagnosis of all respiratory cases in a structured questionnaire.

Results: Total children surveyed in this study was 1006 (Outdoor 938, Indoor 68) and the number of children who had respiratory problems were 773 (77%). The percentage of outdoor cases was 719 (93%) and indoor cases 54 (7%). There were 452(58%) male and 321(42%) female cases. The age distribution of children who attended the hospitals were 1-6 months 18.5%, 7 to 12m-19.5%, 13 to 24m 20.2%, 25 to 59m 41.8%, mean age 24.5 m. Clinical diagnosis of important respiratory disorders were common cold 371(48%), bronchiolitis 143(18.5%), pneumonia 52 (6.7%), asthma 80 (10.3%) and others 127 (16.4%).

Conclusion : This study disclosed that the respiratory disorders in under five children attending the different upazila hospitals were common cold 48%, bronchiolitis 18.5%, pneumonia 6.7% and asthma 10.3%.



Antibiotics for bronchiolitis in children under two years of age (Review)

Rebecca Farley[1], Geoffrey KP Spurling[1], Lars Eriksson[2], Chris B Del Mar[3]

This is a reprint of a Cochrane review, prepared and maintaine d by The Cochrane \ Collaboration and published in The Cochrane Library

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WILEY

Out of 728 studies on antibiotics and bronchiolitis during last 48 years (1966 - 2014), Seven were RCT Studies of **which Two from Bangladesh**

Background: Bronchiolitis is a serious respiratory illness that affects babies. It ismost commonly caused by respiratory syncytial virus (RSV) and is the most common reason for hospitalisation in babies younger than six months. Babies usually present with runny nose, cough, shortness of breath and signs of difficulty in breathing, which can become life-threatening. Despite its viral cause, antibiotics are often prescribed. Prescribers may be expecting benefits from anti-inflammatory effects attributed to some antibiotics or be concerned about secondary bacterial infection, particularly in children who are very unwell and require intensive care.We wanted to discover if antibiotics improved or worsened clinical outcomes in children with bronchiolitis.

Objectives: To evaluate the effectiveness of antibiotics for bronchiolitis in children under two years of age compared to placebo or other interventions.

Search methods: We searched the Cochrane Central Register of Controlled Trials (CENTRAL 2014, Issue 6), which includes the Cochrane Acute Respiratory Infection Group's Specialised Register, and the Database of Abstracts of Reviews of Effects, MEDLINE (1966 to June 2014), EMBASE (1990 to June 2014) and Current Contents (2001 to June 2014).

Data collection and analysis. Two review authors independently analysed the search results.

Selection criteria: Randomised controlled trials (RCTs) comparing antibiotics to placebo in children under two years diagnosed with bronchiolitis, using clinical criteria (including respiratory distress preceded by coryzal symptoms with or without fever). Primary clinical outcomes included time to resolution of signs or symptoms (pulmonary markers included respiratory distress, wheeze, crepitations, oxygen saturation and fever). Secondary outcomes included hospital admissions, length of hospital stay, readmissions, complications or adverse events and radiological findings.

Results of the search: Initial database searching revealed the following results: 173 articles in MEDLINE, 102 articles in EMBASE, 23 articles in CENTRAL and two articles inDARE.Of these 300 articles, we rejected 297 on the basis of title and abstract alone leaving three studies. In the 2011 update, we identified an additional 259 studies, with 35 duplicates and 220 rejected on title and abstract alone with four studies remaining. Of the seven studies

identified from initial and updated searches, we excluded two: one because it did not involve clinical criteria for inclusion (Friis 1984), and one because it did not involve an antibiotic (Boogaard 2007). Five studies did meet the inclusion criteria (Field 1966; Kabir 2009; Kneyber 2008; Mazumder 2009; Tahan 2007). In this 2014 update, following removal of duplicated studies, the searches resulted in the identification of a further 169 articles. We retrieved five articles for further evaluation. Two of these reported data fromstudies thatmet the inclusion criteria (McCallum2013; Pinto 2012).We excluded three articles as they related to the study reported in McCallum 2013 and did not include any outcome data.

In total 728 in studies were found in field of antibiotics and bronchiolitis during last 48 years (1966 - 2014).

Included studies : Field 1966, Tahan 2007, Kneyber 2008, Mazumder 2009, Kabir 2009, Pinto 2012 and McCallum 2013 (7 studies) met the inclusion criteria, randomising children to antibiotics or control groups. All study participants were children under two years of age except for Tahan 2007, which only included children under sevenmonths of age. Two studies were conducted in low-income countries, both in Bangladesh (Kabir 2009; Mazumder 2009). These two studies compared oral erythromycin with intravenous ampicillin and control. Two studies were conducted in upper-middle income countries. Tahan 2007 (Turkey) compared clarithromycin with placebo, while Pinto 2012 (Brazil) compared azithromycin with placebo. Kneyber 2008 and McCallum 2013 were conducted in high-income countries and compared azithromycin with placebo. Field 1966, also conducted in a high-income country, compared oral ampicillin with placebo. All studies included participants who were hospitalised and only one study recruited froman outpatients department (Mazumder 2009). Only the two most recent studies clearly identified their funding sources (McCallum 2013; Pinto 2012).

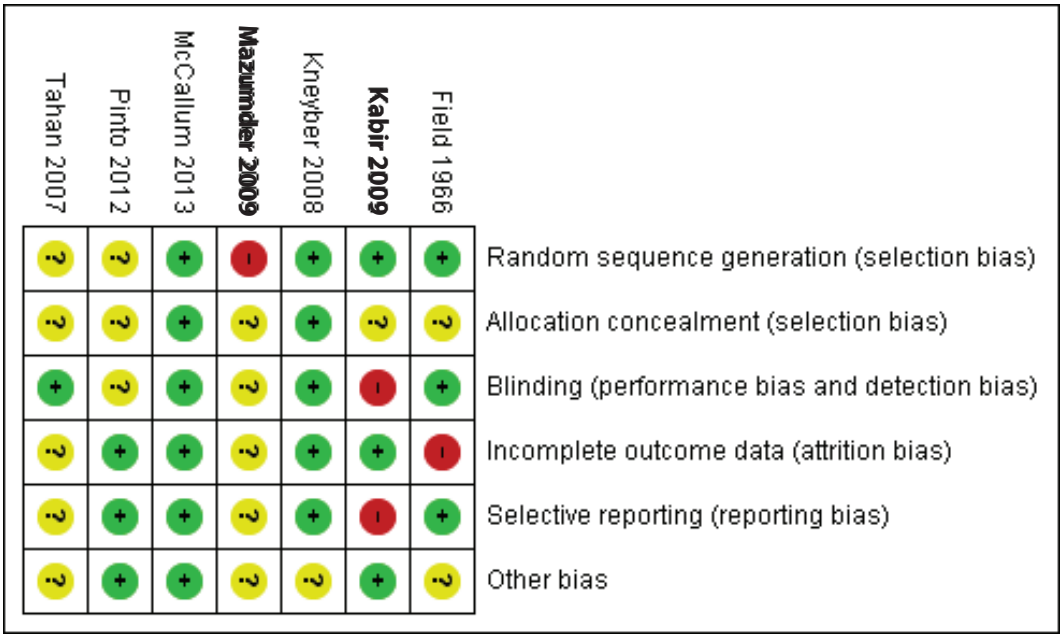

Fig.-1: Methodological quality summary: review authors' judgements about each methodological quality item for each included study.

Excluded studies: Boogaard 2007 did not study antibiotics for bronchiolitis. We excluded one study because it dealt with both pneumonia and bronchiolitis using crepitations and radiography as criteria for patient selection (Friis 1984). The study did perform a subgroup analysis of the two groups (antibiotics and placebo) based on virological diagnosis and these results are discussed.

Summary of main results

Six included studies did not find any difference between antibiotics and placebo for their primary outcomes of length of illness (Field 1966) or length of hospital stay (Kabir 2009; Kneyber 2008; Mazumder 2009;McCallum 2013; Pinto 2012). One small study with a high risk of bias found that three weeks of clarithromycin significantly reduced hospital admission compared to placebo (Tahan 2007). This reduction in hospital readmissions was not replicated in a more recent study that randomised 97 children to receive either a single large dose of azithromycin or placebo (n = 50 azithromycin, n = 47 placebo) (McCallum 2013). Another study with a high risk of bias found mixed results for the effects of antibiotics on wheeze but no difference for other symptom measures (Mazumder 2009).

We only combined data for deaths, duration of supplementary oxygen use and length of hospital stay. There were no deaths in any arms of any of the seven included trials. For duration of supplementary oxygen use, we combined three studies comparing azithromycin versus placebo (Kneyber 2008; McCallum 2013; Pinto 2012). The three studies providing adequate data for days of supplementary oxygen showed no difference between antibiotics and placebo (pooled mean difference (MD) -0.20; 95%con- fidence interval (CI) -0.72 to 0.33). For length of hospital stay, we combined data fromthree studies comparing the use of azithromycin versus placebo as a subtotal as part of the overall analysis of the effect of antibiotics on hospital stay (Kneyber 2008; McCallum 2013; Pinto 2012).One other study comparing erythromycinwith placebo was not included because its addition resulted in statistically significant heterogeneity of the pooled results. This study had a higher risk of bias and it used a different antibiotic (erythromycin rather than azithromycin) as the intervention (Kabir 2009). The three studies providing adequate data for length of hospital admission similarly showed no difference between antibiotics (azithromycin) and placebo, providing a pooled MD of -0.58 days (95% CI -1.18 to 0.02) with acceptable statistical heterogeneity. Two studies providing sufficient data to compare hospital readmissions showed no significant difference between antibiotic and placebo groups but we did not pool data as there was a substantial risk of heterogeneity (I2statistic = 59%) (McCallum 2013; Tahan 2007).

Authors' Conclusions

Implications for practice : Overall, this review does not support the use of antibiotics for bronchiolitis. Antibiotics may be justified in children with bronchiolitis who have respiratory failure.

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Respiratory Disorders in Under-Five Children Attending Different Hospitals of Bangladesh: A Cross Sectional Survey

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Abstract

Research Motivation: There is a lack of global nationwide data on the magnitude of different acute respiratory disorders in under-5 children attending different hospitals, although, overall, these are the leading causes of morbidity and mortality in developing countries. Thus, we sought to evaluate the magnitude, validity of clinical diagnosis of respiratory disorders, and commonly prescribed medications by local doctors in under-five children attending different hospitals of Bangladesh.

Methodology: This cross sectional study was conducted in forty three hospitals which were randomly selected from all six divisions of Bangladesh. We enrolled all children who either visited outpatient department (OPD) or hospitalized in in-patient department (IPD) of the respective hospital on a defined day of visiting the hospitals. Data were collected by previously trained clinicians in a pre-tested questionnaire to attain the objectives.

Main Findings: Among a total of 5157 surveyed children, 3484 (67%) had respiratory problems. Common cold, bronchiolitis, pneumonia, and asthma diagnosed by the trained research team doctors were 1659 (48%), 744 (21%), 402 (11.5%), and 277 (8%); respectively. The sensitivity and specificity of the diagnoses made by local hospital doctors were 15% and 99% for bronchiolitis, 73% and 90% for pneumonia and 10% and 100% for asthma respectively. The rate of use of main modalities for the management of respiratory problems was as follows: oral antibiotics 79%, oral bronchodilators 57.5% and oral antihistamines 38%. as prescribed by the doctors. The local doctors used to follow Integrated Management of Childhood Illness (IMCI) guideline in diagnosing and managing childhood respiratory disorders. **Implications:** The results underscore the importance of modification of IMCI guideline in order to prevent the irrational use of antibiotics and antihistamines in managing such children.

Keywords: High prevalence, respiratory disorders; under diagnosis, bronchiolitis, asthma; misuse of antibiotics.

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Introduction

Acute lower respiratory tract infection (ALRI) is the major cause of morbidity and mortality in paediatric age group and responsible for 120 million episodes of pneumonia and 1.3 million under-five childhood global deaths (Walker et al., 2013). In Bangladesh, Acute Respiratory Tract Infections (ARI) alone is responsive 38.8% of total Paediatric hospital admission, 40% to 60% of total Paediatric OPD visit (Akbar et al., 1992, WHO, 1984) and among the 182936 under-five childhood deaths in Bangladesh, 14% were due to pneumonia (Black et al., 2010). The two most common causes of ALRI in children below 2 years of age are bronchiolitis and community acquired pneumonia (CAP) (Haque et al., 2012, Kabir et al., 2009a, Kabir et al., 2009b). Pneumonia can be diagnosed clinically in a febrile and coughing child based on fast breathing and chest in-drawing the two important features for the diagnosis of pneumonia in children (Chisti et al., 2009, Chisti et al., 2011). Additionally, crackles, occasional rhonchi and end point consolidation and other infiltrates on X-ray chest might help for the diagnosis of pneumonia in children (Cherian et al., 2005). The important clinical features to distinguish pneumonia from bronchiolitis are age, nutritional status, fever, runny nose, and an auscultatory finding in lungs such as wheeze and crackles (Kabir et al., 2003a).

The first report of bronchiolitis in an epidemic form in Bangladesh was in the year 2001-2002 (Kabir et al., 2003b, Kabir, 2002) most of which was due to respiratory syncytial virus (RSV) during winter and early spring (Haque et al., 2012). The peak age of bronchiolitis is between 2 and 6 months with the incidence of as high as 83% of all cases of ALRI (Kabir et al., 2009a, Grover et al., 2011). Though there has been awareness about bronchiolitis in Bangladesh, still the diagnosis of pneumonia gets upper hand to level any child presenting with fast breathing and chest in-drawing (Kabir and Mridha, 2003). There are lot of recent advances in the management of bronchiolitis (Verma et al., 2013), but still these children are indiscriminately treated with costly antibiotics like ceftriaxone (Kabir et al., 2003b). Although, bronchiolitis used to be associated with coryzal symptoms followed by rapid onset of wheezing, fever, tachypnea, chest in-drawing, crepitations and rhonchi with radiographic evidence of hyperinflation (Ahamed and Kabir, 2003). In the guideline for the management of bronchiolitis by the Bangladesh Pediatric Pulmonology Forum (BPPF) , cough and respiratory distress preceded by runny nose in young children below 2 years with or without wheeze or fever have been proposed to be considered as bronchiolitis (Kabir et al., 2004). Thus, it is important to consider the diagnosis of bronchiolitis in these children to optimize its management and counsel the parents.

Prevalence of childhood asthma is substantial and asthma has often been treated as pneumonia and under-diagnosed in developing countries (Nantanda et al., 2013). Bangladesh is no longer any exception of them with low prevalence (Kabir et al., 2005).

From IMCI point of view, it is a common practice for our health care professionals to diagnose any child coming with fast breathing, or chest in-drawing, or cyanosis, or hypoxemia to level as to have 'pneumonia' or 'severe pneumonia' (WHO, 2013), irrespective of the presence or absence of bronchiolitis, asthma or other illness causing respiratory distress. As a result, the children are given broad spectrum antibiotics without looking into the actual etiology of the respiratory distress, although, it will be of extreme significance to identify the large group of children who need different modality of management resulting in optimised management and rational use of antibiotics. However, data are very limited on the magnitude of different acute respiratory disorders, their diagnosis and management in under-5 children by the untrained local doctors attending different hospitals. Thus, we sought to have the knowledge of the magnitude, diagnosis, and management of different types of ARI focusing on pneumonia, bronchiolitis, and asthma in our country.

Methodology

Study Design

It was a cross sectional study conducted between February 2008 and January 2009. The study was approved by the institutional review board named as "Ethical Review Committee" of Bangladesh Medical Research Council (BMRC). A written informed consent was obtained from the care givers or the legal guardians before enrolment in the study. It is prudent to mention that, all

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participants in the study provided their written informed consent to participate in the study and the "Ethical Review Committee" approved this consent procedure.

Two groups of children were included in the study group. One group aged 1 month to 59 months and were found hospitalised on a particular day into ward of the hospital. Another group aged 1 month to 59 months who attended the outpatient department (OPD) on that very day with different health problems. Case definitions of diagnostic criteria of different respiratory disorders have been shown in table 1.

Table 1: Clinical case definitions of different respiratory disorders

Disorders	Must features	Additional features
Pneumonia	• High Fever (≥ 101º F) • Fast breathing***	• Feeding difficulty • Chest indrawing • Crepitation
Bronchiolitis	• Age: 1 mo to 24 mo • First attack of wheeze or • Runny nose followed by respiratory distress	• Fever • Crepitation
Asthma	• Age > 1 year • Recurrent wheeze (3 or more attacks of afebrile respiratory distress or wheeze) • Rhonchi	• Responding to bronchodilator • Other atopic features
Infantile wheeze	• Three or more attacks of wheezy respiratory distress in first year of life or • Wheezy respiratory distress persisting for more than one month in first year of life	
Common cold	• Cough and runny nose	
Rhinitis	• Nasal discharge without cough	
Sore throat	• Fever • Red and congested either tonsil or pharynx or both	• Feeding difficulty • Drooling of saliva
AOM	• Aural discharge for < 7 days	• Incessant • Fever
CSOM	• Aural discharge for more than 2 weeks	
Viral croup	• Stridor • Respiratory distress • Hoarse voice • Brassy or bovine cough	• Restless child
Pulmonary TB	• Fever > 1 month • CXR: Hilar adenopathy	• Positive TST • Positive family history • CXR: consolidation
Laryngomalacia	• Chronic stridor (> 2 weeks) within first month of life • No fever	• Rspiratory distress increases on supine position or at night
Foreign body aspiration	• H/O choking during feeding • Respiratory distress	• Recurrent respiratory distress • CXR: obstructive
Pleural effusion	• CXR showed pleural effusion (Homogenous opacity) • Thoracentesis: pleural fluid aspirated	• Fever • Respiratory distress
Empyema thoracis	• Pus collection on thoracentesis	• Fever • Respiratory distre
Recurrent pneumonia	• Recurrent fever • Recurrent respiratory distress • Crepiration	• Consanguinity between parents
Atelectasis	• CXR: volume shrinkage	• Shifting of mediastinum (trachea or heart)

AOM: acute otitis media; CSOM: chronic suppurative otitis media; TB: tuberculosis; CXR: chest X- ray; TST: tuberculin skin test; H/O: history of.

Children having respiratory distress with signs of heart failure (tachycardia with hepatomegaly or dependent edema or heat murmur), children having respiratory distress arising from non-respiratory cause were excluded from the study.

The study was conducted in all government medical college hospitals, randomly selected twelve district hospitals and twelve upazilla hospitals from all over Bangladesh. The largest children's hospital of the country, 350-beded Dhaka Shishu Hospital (DSH), Dhaka and Institute of Child and Mother Health (ICMH), Dhaka having the largest OPD service were also included in the study. Other important hospitals of Dhaka city included in the study were Bangabandhu Sheikh Mujib Medical University (BSMMU) and Institute of Child Health (ICH), Mirpur. The total hospitals were 43 from all over Bangladesh (15 medical colleges and 12 district hospitals, 12 upazilla hospitals, ICMH, DSH, ICH and BSMMU).

Procedure

The project manager and the four physicians were trained on the project, its goals, objectives, procedures and utility of the study for three days (including orientation and practical sessions) at ICMH. The orientation also included the clinical diagnostic criteria of respiratory disorders and hands on training on filling up of the structured questionnaires. Trainee doctors in pediatrics were trained (research team doctors) on the clinical diagnosis of various respiratory disorders and their performance were field tested before starting the data collection. The research team doctors collected data on a single day from OPD and IPD. The co-investigators were also invited to attend on the first orientation day.

The four member team of the doctors after undergoing orientation course and about how to fill up the questionnaire, started travelling to different hospitals. First, the hospitals of ICMH, DSH and Dhaka Medical College Hospital (DMCH) were covered. The team first met the Head of Department (HOD) of Pediatrics on the day of data collection. The HOD of respective hospital was informed beforehand, so that, HOD could organise his staff of OPD and IPD in preparation of the ensuing visit by the research team doctors. The OPD doctors of the respective hospital referred the respiratory cases to the research team doctors after managing the cases. The research team doctors had taken face-to-face interview with care givers and filled-up the questionnaires, evaluated the diagnosis made by the local doctors of the respective hospital and made the actual diagnosis both in the OPD and IPD. In case of inpatient documentation, the management given by the local hospital doctors was also documented in the questionnaires. The documentation included total number of under five children attended the OPD, total under five children hospitalized in inpatient, and total number of respiratory cases both in OPD and IPD.

The research team doctors remained vigilant on every case identification and meticulously filled-up the printed questionnaire after having an interview with the care givers and thorough physical examination of the child, and maintained all records under the supervision of the co-investigators and co- investigators performed the data checking

under the supervision of the principal investigator (PI). PI was solely responsible for supervising the data entry, analysis, data interpretation and writing the drafts. He maintained constant connection through the project manager with every centre and constantly guided the proceedings.

All data were rechecked and scrutinised by the PI and maintained with him. The data were cleaned and entered by an enterer into the Epi-info program and analysed in the Statistical Package for the Social Sciences (SPSS) software programme. The magnitude of the problems was assessed by measuring the proportions and the validity of the diagnoses of different types of ALRI by local doctors by comparing with trained research team doctors was performed by evaluating the sensitivity and specificity.

Results

The total number of reviewed children under the age of 15 attending different hospitals was 7793 and among them the under-five children were 5157 (66%). Among a total of 5157 (OPD 4115,80% and IPD 1042, 20%) surveyed children, 3484 (67.5%) had respiratory problems. Among the respiratory problems, OPD cases were 2973 (85%) and IPD cases 511 (15%). Among the 43 hospitals surveyed; 19 teaching hospitals, 12 district hospitals, and 12 upazilla hospitals entertained 1750 (50%), 961 (28%), and 773 (22%) children respectively. Utilization of hospital beds in upazilla hospital, district hospital, and medical college hospital/ teaching hospitals was 54 (7%), 132 (14%), and 325 (19%) respectively. Children with respiratory disorders, 2113 (61%) were male and 1371 (39%) were female. Their mean age was 21.3 months. However, their different distribution has been shown in table 2. Different respiratory disorders diagnosed clinically by local doctors and by trained research team doctors have been shown in table 3 and table 4 respectively. Distribution of respiratory disorders in OPD and IPD of different categories of hospitals has been shown in table 5. The sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of diagnosis of bronchiolitis, pneumonia, and asthma by the local doctors were variable and have been shown in table 6.

Table 2: Distribution of ages of children attending different levels of hospitals

Age group	Type of hospitals			Total
	Upazilla hospitals	District hospital	Teaching hospitals	
Upto 6 months	143 (16.0%)	253 (28.3%)	495 (55.5%)	891 (100%)
7 to 12 months	151 (22.4%)	166 (24.6%)	357 (52.9%)	674 (100%)
13 to 24 months	156 (21.8%)	211 (29.5%)	347 (48.5%)	714 (100%)
25 to 59 months	323 (26.8%)	331 (27.4%)	551 (45.7%)	1205 (100%)
Total	773	961	1750	3484

Figures represent n (%), unless specified

Table 3: Total, OPD and IPD distribution of clinical diagnoses of respiratory disorders by the local hospital doctors

Local hospital diagnosis	Total	Hospital services	
		OPD	IPD
ARI	1980 (56.8%)	1932 (65%)	48 (9.4%)
Pneumonia	380 (10.9%)	223 (7.5%)	157 (30.7%)
Cough and cold	227 (6.5%)	221 (7.4%)	06 (1.2)
Severe pneumonia	196 (5.6%)	165 (32.3%)	31 (1.0%)
Bronchiolitis	150 (4.3%)	90 (3.0%)	60 (11.7%)
RTI	96 (2.8%)	92 (3.1%)	04 (0.8%)
AOM	38 (1.1%)	38 (1.3%)	--
CSOM	40 (1.1%)	40 (1.3%)	--
Very Severe pneumonia	11 (0.3%)	04 (0.1%)	07 (1.4%)
Common cold	31 (0.9%)	31 (1.0%)	--
Asthma	30 (0.9%)	23 (0.8%)	07 (1.4%)
Wheezy child	12 (0.3%)	06 (0.2%)	06 (1.2%)
Tonsillitis	17 (0.5%)	17 (0.6%)	--
URTI	10 (0.3%)	10 (0.3%)	--
Others	266 (7.6%)	215 (7.2%)	51 (10.0%)
Total	3484 (100%)	2973 (100%)	511 (100%)

Figures represent n (%), unless specified; RTI; respiratory tract infections; URTI: upper respiratory tract infections;

Table 4: Number and percentages of clinical diagnoses of respiratory disorders by the research team

Clinical diagnosis	Number	Percentages
Common cold	1659	47.6
Bronchiolitis	744	21.4
Pneumonia	402	11.5
Asthma	277	8.0
Rhinitis	80	2.3
Sore throat	71	2.0
AOM	61	1.8
CSOM	60	1.7
Infantile wheeze	57	1.6
Others	73	2.1
Total	3484	100.0

Table 5: Distribution of respiratory disorders in OPD and IPD of different categories of hospitals

Clinical diagnosis	Total	Different hospitals					
		Health complex		District hospital		Teaching hospitals	
		OPD	IPD	OPD	IPD	OPD	IPD
Common cold	1659	370 (99.7%)	01 (0.3%)	473 (98.5%)	07 (1.5%)	793 (98.1%)	15 (1.9%)
Bronchiolitis	744	122 (85.3%)	21 (14.7%)	142 (71.7%)	56 (28.3%)	273 (67.7%)	130 (32.3%)
Pneumonia	402	33 (63.4%)	19 (36.6%)	63 (53.8%)	54 (46.2%)	94 (40.3%)	139 (59.7%)
Asthma	277	68 (85%)	12 (15%)	56 (86.1%)	09 (13.8%)	115 (87.1%)	17 (12.9%)
Others	402	126 (99.2%)	01 (0.8%)	95 (94.0%)	06 (6.0%)	150 (86.2%)	24 (13.8%)
Total	3484	719 (93.0%)	54 (7.0%)	829 (86.2%)	132 (13.8%)	1425 (81.4%)	325 (18.6%)

Figures represent n (%), unless specified

Table 6: Overall diagnostic accuracy of local hospital doctors to identify bronchiolitis, pneumonia and asthma

Common disorders	Sensitivity	Specificity	PPV	NPV
Bronchiolitis	15.4%	98.7%	76.7%	81.1%
Pneumonia	72.6%	90.4%	49.7%	96.2
Asthma	10.1%	99.9%	93.3%	92.8%

Table 7: Number and percentages of variety of medications used for study patients

Drugs used	Number	Percentages
Antibiotics oral	2732	79.2
Oral bronchodiltor	1983	57.5
Paracetamol	1462	42.4
Antihistamine	1312	38.0
Antibiotics parental	560	16.2
Nebulisation with salbutamol	509	14.8
Oxygen	341	9.9

Medications used for these study children have been shown in table 7. Oral antibiotics (79%), oral bronchodilators (57.5%), paracetamol (42%), antihistamine (38%), parental antibiotics (16%), nebulized salbutamol (15%) and oxygen (10%) were important modalities. In common cold, 654/1659 (39%) cases were treated with cotrimoxazole, followed by amoxicillin (256, 15%), azithromycin (186, 11%), cefradine (108, 6.5%), ceftriaxone (106, 6%) and erythromycin (69, 4%). Cotrimoxazole was mostly (236/325, 69%) used in upazilla hospitals In bronchiolitis, most (267/744,36%) children received ceftriaxone followed by cotrimoxazole (122, 16%), amoxicillin (112, 15%), azithromycin

(40, 5%) and cefradine (35, 5%). Cotrimoxazole was the most common antibiotic (51, 42%) used in upazilla hospitals . Ceftriaxone was mostly used in teaching hospitals (156/267, 58 %) followed by district hospital (84, 31%). Asthma was treated mostly with cotrimoxazole (69/277, 25%), followed by azithromycin (65, 23%), ceftriaxone (53, 19%), and amoxicillin (41, 15%). Cotrimoxazole was the most common antibiotic in upazilla hospitals (35, 51%). Pneumonia was treated mostly with ceftriaxone (191, 47.5%), followed by amoxicillin (40, 10%), cefixime (34, 8%), cotrimoxazole (34, 8%) and ampicillin (26, 6%). Ceftriaxone was uniformly prescribed in all levels of hospitals; upazilla 46%, district 49% and teaching hospitals 48%.

Discussion

This is the only study which conducted in a nationwide survey to evaluate the magnitude and pattern of respiratory disorders in under-five children and covered 43 health centres from all over the country. Our observation of 5157 children in twelve upazilla hospitals (Upazilla health complex), 12 district hospitals (Sadar/ general hospital), all 15 government medical colleges' hospitals, and 3 large children's hospitals of Dhaka city underscored the representative sample of the whole country. There were four main observations in this pioneer study:

first- more than two-third of children were suffering from various types of respiratory disorders, second- the common respiratory problems in under-five children attending different hospitals of Bangladesh were common cold followed by bronchiolitis, pneumonia and asthma, third- doctors working in the community level often under-diagnose bronchiolitis and asthma, and fourth- use of irrational antibiotics and other medications in common cold, bronchiolitis, asthma and pneumonia.

The observation of respiratory disorders in more than two-thirds of the evaluated children in our survey is an important finding for the clinicians as well as policy makers in developing countries and this observation is consistent with the earlier studies in other developing countries (El-Sahly et al., 2000, National Institute for and Clinical, 2008). Important clinical features that have been observed for the diagnosis of common cold, bronchiolitis, pneumonia, and asthma by the trained research team doctors were more or less consistent with our study definition. The findings indicate that policymakers in developing countries may help clinicians to find out a way to improve the skill of identifying and treating different respiratory problems. The observation of common cold and bronchiolitis as the common respiratory problems ahead of pneumonia and asthma in under-five children attending different hospitals of Bangladesh is also important for the clinicians and this is also consistent with earlier studies (El-Sahly et al., 2000, National Institute for and Clinical, 2008). This observation may help our future clinicians to be more rational about the use of antibiotics in such children. However, use of irrational antibiotics and other medications such as antihistamines and oral bronchodilators in common cold, bronchiolitis, asthma and pneumonia in our study is an alarming observation as in other developing countries (Tabatabaei et al., 2012). Observation of irrational prescribing practise by physicians may have an impact on the potential increase in resistance of many respiratory pathogens to currently available antibiotics required for treatment of such children (Gwimile et al., 2012). Moreover, another observation of poor sensitivity in

diagnosing bronchiolitis and asthma by the local doctors indicates that doctors working in the community level often miss the diagnosis of bronchiolitis and asthma and may mistakenly diagnose them as childhood pneumonia. This performance of the local hospital doctors indicate that doctors are being trained like field level health workers who are supposed to classify the respiratory disorders at the first level of health care facility before giving any treatment or planning for referral. This performance of the local doctors underscores the importance of urgent need for the continued supervised training on these common respiratory problems for the local doctors by the pediatric respiratory physicians for the appropriate diagnosis and treatment in such children in order to reduce the long term morbidity and deaths especially in resource poor settings.

There were other few important observations. The OPD attendance of under- five children was 80% and IPD cases 20% in this age group indicating greater number of younger children attending the OPD. The attendance of children having respiratory disorders in different hospitals increases from small to larger hospitals (upazilla hospitals 22%, district hospitals 28% and teaching hospitals 50% respectively). Children with respiratory disorders were more treated in OPD (85%) than being hospitalised (15%) which is consistent with earlier studies (Tabatabaei et al., 2012, Stone et al., 2000). Utilisation of hospitals beds also strikingly increased from small to large hospitals (upazilla hospitals 7%, district hospitals 14% and teaching hospitals 19% respectively). This might be due to the fact that large hospitals used to have the availability of higher level of facilities for the better treatment. Our observation of male predominance in attending the all levels of hospitals might be due to the fact that male are more prioritized and simultaneously female less prioritized by their family members in our so called social culture (Chisti et al., 2008). However, the vulnerability of male sex to illness than the female sex cannot be ruled out.

The main limitation of the study is that the study is cross-sectional, it can't offer a proper answer on the first conclusion made about the incidence of different diagnosis in a hospital setting because of the seasonality of respiratory disorders. Seasonal occurrence of different acute and exacerbations of chronic respiratory disorders is the major driver of their health resource utilization so using a cross-sectional approach clearly underestimates some and overestimates other respiratory disorders.

In conclusion, the results of our data suggest that the magnitude of respiratory disorders in under-five children was very high and more than two-third of them suffered from common respiratory disorders such as common cold, bronchiolitis, pneumonia and asthma. Local doctors often under diagnosed bronchiolitis and asthma might be due to their over diagnosis of pneumonia. Indiscriminate use of antibiotics, antihistamine and bronchodilators are rampant for these common respiratory disorders. The findings underscore the importance of incorporation of the management of bronchiolitis and asthma in the on-going IMCI program considering the magnitude, diagnostic difficulties and mismanagement. Simultaneously, implementation of routine training on diagnostic criteria and treatment of common respiratory disorders especially in large hospitals may help to reduce the long term morbidity and deaths in such children.

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Study of Nutritional Status of Children 02-24 Months with Acute Bronchiolitis and Pneumonia

Nazmun Nahar Shampa, Md Abid Hossain Mollah, Mallick Masum Billah, **ARM Luthful Kabir,** Narayan Chandra Saha

Background: Acute bronchiolitis and pneumonia, the two most important causes of lower respiratory tract infections (LARI), pose significant morbidity and mortality of under 5 children, which is further influenced by poor nutritional status of the affected child because of depressed immunity.

Objective: To evaluate the nutritional status of children suffering from acute bronchiolitis and pneumonia.

Methods: This cross sectional study was conducted in the Department of Pediatrics of Dhaka Medical College Hospital and Dhaka Shishu Hospital from July, 2010 to June, 2011. After enrolment, anthropometric measurements e.g. weight, length, MUAC and OFC were done and recorded in a pretested semi structured questionnaire. For each group Z score of weight for age, weight for length, length for age, OFC and MUAC were calculated. Z score +2 to -1 was defined as normal, -1 to -2 z score as mild poor, -2 to -3 z score as moderate poor and <-3 z score was defined as severe poor status. Results were compared between pneumonia group and bronchiolitis group by using calculated Z value. A calculated Z value more than 1.96 was regarded significant (calculated z value > 1.96 is equivalent to p value< 0.05).

Results: A total of 50 patients of pneumonia aged 2-24 months and 50 patients of acute bronchiolitis of same age were enrolled in this study. Number of cases with severe under nutrition (weight for age <-3 SD), microcephaly (OFC <-3SD) and low MUAC (<115 mm) were found significantly more (P value <0.05) in pneumonia group (50%, 30% and 20% respectively) than the bronchiolitis group (30%, 12% and 10.2% respectively). Pneumonia cases were found more wasted (weight for length) and stunted (length for age) than bronchiolitis cases though the differences were not statistically significant.

Conclusion: Thus, overall nutritional status was poor in pneumonia cases than the bronchiolitis cases.

Bronchiolitis and Nutritional Status

ARM Luthful Kabir, N Haq, R Amin, A Hossain, S Khatoon, S Akhter, T Sharif, S Ahmed, A Rahman, M Hossain, S Ahamed, and A Khashru

Annual Scientific Conference (ASCON) 2002
ICDDR'B, Dhaka

Objective: Evaluate the nutritional status and outcome of consecutively hospitalized young children with bronchiolitis.

Methodology: Three hundred and forty-eight (348) children, aged less than 2 years, with bronchiolitis were studied in different hospitals of Dhaka city. Diagnosis of bronchiolitis was made on the basis of the first attack of wheeze in previously healthy children aged less than 2 years. Immediate medical history was collected from their mothers through a structured questionnaire. The weight of each child was measured and the weight-for-age z-score calculated to find out the nutritional status. Chest X-ray was done in each case to find out the radiological changes. Blood samples of 80 patients were studied for RSV IgM and IgG antibody by ELISA. The children were followed up till discharge.

Results: There were 66% male and 34% female children. The median age of the children was 3.0 months. Fifty-five percent of the cases came from rural areas and 45% from urban areas. Forty-seven (58.7%) children were positive for IgM antibody, and 14 (17.5%) were positive for IgG antibody giving rise to 76.2% RSV virus positivity. Most (72%) children had good nutritional status (WAZ -2.0 through the highest), and a minority had either moderate underweight (21%) (WAZ -2.01 to -3.0) or severe underweight (7.5%) (WAZ <-3.0 through the lowest). There was no difference in the mean respiration rate among three groups of children (66.8, 66.4, and 67.1 in well-nourished, moderate underweight, and severe underweight groups respectively). The hospital stay had the trend of increasing duration with the decrease of body weight (4.5, 5.3 and 6.0 days respectively, $p< 0.009$).

Conclusion: Bronchiolitis is responsible for significant morbidity in young children. The duration of hospital stay increases with the decrease of nutritional status.

Emerging Respiratory Problems In Children of Bangladesh

ARM Luthful Kabir

1st National Conference, BPPF
17 December 2003, Hotel Sheraton, Dhaka

Respiratory problems in children comprise one third of all childhood illnesses. Considering the OPD attendance of children the respiratory problems include five important causes out of top ten causes. The five causes are: cough and cold, pneumonia, bronchiolitis, pharyngotonsillitis and otitis media. The top ten problems which we encountered in hospitalised children of a large hospital during 1989-1990 were pneumonia, diarrhoea, PEM, helminthiasis, febrile convulsion, meningitis, encephalitis, nephrotic syndrome, tuberculosis and hemolytic anemia. There has been a changing pattern of pediatric diseases in children who are now hospitalised with severe illnesses. After a decade, the disease pattern of pediatric inpatients now includes two important respiratory problems like bronchiolitis and asthma, which were not observed earlier, in the top ten list. This is our experience out of several studies conducted in the last decaple (vide references).

Bronchiolitis

The recognition of bronchiolitis is important. The disease affects children below two years of age. The diagnosis of bronchiolitis is clinical, characterised by running nose, low grade fever, wheeze, respiratory distress, cough, vomiting and feeding dificulty. X-ray chest shows hyperluscent and hyperinlated lung fields with increased interstial markings. Bronchiolitis is a self-resolving disorder with rapid defervescence. Improvement of respiratory distress occur in 3-5 days but cough may persist for next few weeks. RSV positivity in nasopharyngeal aspirate was observed in 60% cases during the epidemic. The principles of management in bronchiolitis differ from that of pneumonia. Oxygen therapy and nebulisation with salbutamol and ipratropium bromide are the mainstay of treatment. When hospitalised, the course in the hospital is predictable with median period of stay for 4-7 days in 85% cases. Mortality is low (2%). RSV bronchiolitis is characterized by subsequent recurrent wheeze in 70% cases and asthma in 30% cases. Allergic rhinitis

Allergic rhinitis is very common respiratory problem which is often ignored by our parents. It has been found to be the commonest (20%) of all allergic problems in our school children (asthma 7.4%, atopic dermatifi£ 6.0%). The recognition of allergic rhinitis is simple, manifested by one or combination of three/nasal features; running nose, sneezing or blocked nose without having an attack of cold.

Asthma

Asthma is the second most common allergic problem next to allergic rhinitis. The first nation wide survey has found the prevlaence of childhood asthma to be 7.4% as against 5% of adult asthma. It means that more than 4 million children are suffering from asthma in our country. The points to recognise asthma in children are recurrent wheeze, night cough, night cough waking, play induced asthma, prolonged cough having no other cause and associated other allergic conditions like allergic rhinitis, atopic eczema of allergic conunctivitis. Serum IgE level may be raised in atopic conditions.

Infantile wheeze

Wheeze in the first year of life is a intriguing problem for the pediatricians and general practitioners. Wheeze is the second most common complaint next to cough. It creates a great concern to the parents who apprehends wheeze to be asthma in the children. Sometimes it is very difficult to treat wheeze in infants who are unresponsive to usual bronchodilators. Asthma is not the only cause of wheeze in infancy, rather other important conditions which give rise to recurrent wheeze are post bronchiolitis wheeze, asthma, gastroesophageal reflux disease (GERD), heart failure, foreign body aspiration, cystic fibrosis etc.

Bronchiectesis

Bronchiectesis is a chronic lung disease, though considered an uncommon disorder in developed nations but remains a common problem in large degree to the pediatric population of developing countries. It is now called an orphan disease because of being neglected in research and treatment development. The risk factors for the development of bronchiectesis are recurrent pneumonia, pertussis, measles, poorly controlled asthma, middle lobe syndrome, tuberculosis, adenovirus, herpes and mycoplasma pneumonia. Congenital and genetic conditions are also important. Bronchiectesis accounts for 0.25% to 0.47% of hospitalised admissions. In developed countries, 9% of referred children with chronic lung children had bronchiectesis. Left lower lobe is the most commonly affected (72%), followed by lingula (55%), right lower lobe (51%) and right middle lobe (47%). Bilateral bronchiectesis is found in 55% cases (our experience).

Manifestations of bronchiectesis occur before 6 years in 85% cases. Symptoms include cough (97%), sputum production (46%), wheezing (21%), hemoptysis (14%), dyspnea (7%), intermittent fever, recurrent pneumonia involving a single lobe, chest pain and weight loss. Signs of bronchiectesis are inspiratory crackles (82%), dullness on percussion (47%), clubbing (46%), bronchovascular breath sound (19%), halitosis and sinusitis etc.

Laryngomalacia

Laryngomalacia is a congenital benign disorder of the larynx characterized by inspiratory high pitched stridor with a relatively normal voice. It is the most common congenital laryngeal abnormality. It accounts for stridor in 50-70% cases. Laryngomalacia is a self resolving disorder due to a congenital weakness of the aryepiglottic folds and epiglottis which are sucked into the airway during inspiration. Manifestation of laryngomalacia begins within first few days of life upto 2 months. Stridor is louder on inspiration, worse on crying, feeding, excitement, supine position, better in prone position with neck hyperextended. Inspiratory retractions are evident by suprasternal, intercostal, sternal and subcostal recession. The condition may worsen over the first few months of life before improving. The condition significantly improves during the period when the child learns to walk and run.

Foreign body (FB) aspiration

Children are notorious for inserting various objects into their orifices-mouth, nose, ears, lungs, anus and vagina. Aspiration of FB is a major cause of morbidity and mortality in children. It is life threatening emergency and second leading cause of accidental death at

home among children below 5 years. Children between 6 months to 4 years of age. Nuts and seeds account for 70% of FB aspirations. In 80-90% cases FB is lodged in bronchus and in 10% cases FB is lodged in larynx. FB aspirations are spontaneously coughed out in 90% cases. Complications in untreated cases are recurrent pneumonia, bronchiectesis, persistent atelectesis, mediastinal shift etc.

A previously well toddler suddenly starts to choke and cough while eating, playing with a toy. Other features are cough, tachypnea, stridor or wheezing, diminished breath sound or localised ronchi on auscultation. Obstructive emphysema is the hallmark of FB aspiration on chest radiography. Other radiological features include atelectesis, pneumonitis or visibility of FB.

Conclusion: Doctors and parents should be aware of the common respiratory disorders in children. Bronchiolitis needs to be recognised as a different disease entity by all level of health care providers. The implication of diagnosis of bronchiolitis is that the asthma burden in future is enormous and we should be prepared beforehand to handle the ever increasing allergic problems in the days to come. From now on, bronchiolitis is to be documented in our Management Information System (MIS) of Govt hospitals. Hospital set up is to be furnished with necessary logistics to manage bronchiolitis and asthma cases.

Etiology of Respiratory Infections of Hospitalized Infants in a children hospital of Dhaka, Bangladesh

ARM Luthful Kabir , Haq N, Rahman Q, Hossain M, Mannan MA

8th Workshop on Asthma Chest Disease
3-4 May, 2004, NIDCH, Dhaka

Purpose: Hospitalized infants were studied for sociodemographic and clincal features of bronchiolitis and pneumonia and also for common microbiological agents of bacteria, chlamydia and RSV virus.

Methods: Infants (1–12 months) with fast breathing (RR> 50/min) having respiratory distress were selected consecutively for the study. The study was conducted at (ICMH), Matuail, Dhaka during the period of 2003. The previously healthy infants who were admitted with first breathing and first attack of wheeze were clinically diagnosed as bronchiolitis and infants who had fast breathing and chest indrawing without exclusive wheeze were lebelled as pneumonia. A structured questionnnaire was used for face to face interview with mother to collect necessary information about sociodemography, anthropometry, clinical features and hospital course. Induced sputum, nasopharyngeal aspirate and blood were studied for bacteria, RSV virus antigen and chlamydia antibodies (both IgG and IgM).

Results: There were more cases of bronchiolitis, 107 (70.8%) than pneumonia 44 cases (29.1%). Male infants were more vulnerable to bronchiolitis (76.6%) and pneumonia (56.8%) than female counterpart (23.4% and 43.2% respectively, p=.014). The children of both groups shared similar socio-economic and nutritional status like mean number of family members living in one room (bronchiolitis 3.7 Vs pneumonia 3.9), smoking in family (52.3% Vs 63.6%), the mean weight for age (5.4 kg Vs 5.6 kg) and mean supine length (60.4 cm Vs 62.3 cm). The clinical features which were common in both bronchiolitis and pneumonia groups were cough (97.2% Vs 97.7%) , respiratory distress (97.2% Vs 93.2%), H/O fever (94.4% Vs 100%) and poor feeding (86.0% Vs 88.6%), subcostal recession (96.3% Vs 88.6%), palpable liver (85.0% Vs 86.4), mean hemoglobin level (9.7 gm/dl Vs 9.4 gm/dl) and mean duration in the hospital (5.1 days Vs 6.2 days). The two conditions differed as to mean age of occurrence (bronchiolitis 4.5 month Vs pneumonia 5.7 month, p=.02), associated runny nose (62.6% Vs 22.7%), recorded temperature (99.6 F Vs 101.2 F, p <0.001), ronchi (97.2% Vs 22.7%, p <0.001.), crepitation (77.6 Vs 97.7%, p 0.001). WHZ >-1 (72.9% Vs 56.8%, p .04), hyperinflation on radiology (97.2% Vs13.6%, p<0.001). Case fatality was higher in pneumonia (18.6%) than from bronchiolitis (4.0%) p <.001. Nasopharyngeal aspirate (NPA) study showed that only one case was RSV positive. The growth of organism from induced sputum was equally distributed in both groups of disorders. Blood culture could only reveal organism in 6 (4%) cases only. Chlamydia antibody was positive in 8.2% for either IgM or IgG.

Conclusion: Bronchiolitis is more common in infants than pneumonia in hospitalized situation. RSV bronchiolitis is uncommon during a non-epidemic time. Superinfection is common in bronchiolitis. Case fatality is higher in pneumonia than in bronchiolitis. Chlamydia pneumonia is also an important condition in infancy.

Respiratory - Diseases the Leading Cause of Mortality and Morbidity among under Five Children in Bangladesh: Still a Far Cry for Optimal Managemnt: Even after a Decade of ARI Control Program

ARM Luthful Kabir, F. Rahman, A. Rahma, S. Shafinaz, M. Linnan.

100th American Thoracic Society (ATS) Conference
20-25 May 2005, Sandiago, USA

Rationale: To provide an insight to policy makers of low-income countries regarding the magnitude of respiratory disease problem among under five children through presenting senting the magnitude of respiratory diseases in children 0-4 years old from Bangladesh National Health and Injury Survey.

Methods: A population-based survey was conducted between November 2002 and August 2003 in Bangladesh. Nationally representative data were collected from 819,447 population, including 351,651 children. Mothers/head of households were interviewed with a screening form to collect information of the household that included information about the number of deaths in the household in the last 2 years and number of sick (ill or injured) persons in the household in the last 6 months, if any deaths were identified a standard verbal autopsy fonn and in case of any morbidities a standard verbal diagnosis form were administered to determine the cause of death or morbidity. The causes of death and illnesses were reviewed by two independent panels of pediatricians in blinded two-stage procedures that required consensus on the final cause of death and illness.

Results: Proportional mortality and morbidity due to respiratory diseases among under five children were 23% and 29% respectively. The respiratory diseases were predominantly pneumonia/acute respiratory infection (ARI). Proportionate morbidly due to respiratory diseases among infant and 1 -4 years old children were 45%, and 23% respectively.

Conclusions: Respiratory diseases still remain as one of the major causes of under five mortality and morbidity in Bangladesh, and pneumonia is the major cause of early childhood mortality. Infants are the worst victims of respiratory illnesses.

Perception and Practice of Physicians Working at the District and Upazilla Hospitals About the Management of Respiratory Cases In Children

ARM Luthful Kabir, KM Fazlur Rahman, Al Amin Mridha

15th Biennial Conference and Indo-Bangladesh Friendship Society Meet 2006
16-17 February 2006, BCFCC, Dhaka

Background: ARI control program has been going on in the country for more than a decade. Doctors are being trained on the management of acute respiratory infection (ARI) cases all over the country. We need to know the knowledge and perception of the doctors working in the district and upazilla hospital on ARI case management

Objective: To evaluate the knowledge and practice of doctors working at the grass root level on the ARI case management.

Methodology : Doctors who attended ICMH for obtaining training in other courses like Essential Service Package (ESP), Essential Newborn Care (ENC), and Child Health were interviewed through a structured questionnaire on ARI case management during the period of 2000-2003.

Results: Two hundred and forty six doctors could be interviewed. Thirty eight percent obtained ARI/ IMCI training and other 62% did not receive formal training. Physicians diagnosed respiratory cases as : ARI (54%), No pneumonia (49%), pneumonia (60%), severe pneumonia (54%) and very severe pneumonia (47%). The basis of diagnosis of respiratory cases were fast breathing (92%), chest in-drawing (51 %) and inability to feed (29%). The physicians thought that the use of their criteria to diagnose respiratory cases were quick (33`%), useful (50%) and appropriate (38%). They do not need stethoscope to diagnose pneumonia in 80.5% cases. However, the non-trained physicians thought the need of stethoscope is less important for the diagnosis of pneumonia than the trained physicians (p= .01).

Conclusion: Doctors diagnose respiratory as ARI, no pneumonia, pneumonia, severe pneumonia and very severe pneumonia. The basis of diagnosis of respiratory cases were fast breathing and chest in-drawing. They do not need stethoscope to diagnose pneumonia.

Why ARI/ pneumonia is still the leading cause of under five morbidity and mortality even after a decade of ARI control program? -Looking for Explanations

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15th Biennial Conference and indo-Bangladesh Friendship Society Meet 2006
16-17 February 2006, BCFCC, Dhaka

Background : ARI control program has been in progress in the country for more than a decade. There has been a significant reduction in death due to ARI/pneumonia in the country. We need to know the current situation of ARI related mortality and morbidity in the Country.

Objective: To determine the causes of death and morbidity of under five children with possible explanations.

Methodology: A cross sectional national survey was conducted between January to December 2003. Twelve out of 64 districts were randomly selected. Survey was conducted in 171,366 households having 820,347 populations covering 90,357 under five children including 16,193 infants. Data were collected with three sets of forms: screening form, verbal diagnosis form and verbal autopsy form. Consensus was achieved on the diagnosis after analyzing the forms by a group of pediatricians.

Results: ARI/ pneumonia was found to be leading cause of under five morbidity and mortality. The rate of decrease in under five mortality from ARI/ pneumonia was 16% as compared to 33 from diarrhoea over the decade. The death in infancy was found highest during the period of 2-6 months of age, which is surprisingly the peak age of broilchiolitis in young children. Moreover, the deaths of infants (1647) mostly occurred during the months of October through February, the period of winter and peri-winter season, the peak season for RSV bronchlolitis.

Conclusion: There is a tendency on the part of the physicians working in the periphery to diagnose all cases of young children having fast breathing and chest indrawing as pneumonia, and severe pneumonia. The cases of bronchiolitis are misdiagnosed as pneumonia and deaths from bronchiolitis have merged with pneumonia deaths.

Recommendations: The disease entity of bronchiolitis deserves its due importance as regards documentations (by all HCP, hospital records and MIS of DGHS) and clinical management by ensuring oxygen therapy and salbutamol nebulisation (by following the guidelines for the management of bronchiolitis developed by BPPF under the auspices of DGHS).

Barriers in the Management of Bronchiolitis : Our Experience in Bangladesh

ARM Luthful Kabir

Bi-ennial Pediatric Conference
April 29-01 May 2009, Sylhet MAGO Med College, Sylhet

Our knowledge about the magnitude, diagnosis and management of bronchiolitis is pretty little. We are not aware about the true situation as regards bronchiolitis in our country.

We have been experiencing high prevalence of bronchiolitis for last 8 years. (Kabir AR. Bronchiolitis: was there is an epidemic? Bangladesh J Child Health 2002; 26(1/2): 1-2; Kabir AR, Rahman F, Rahman A. ARI situation: aren't we oblivious of bronchiolitis in Bangladesh. Mym Med J; 18(1) 2009 suppl). Bronchiolitis is the commonest cause of lower respiratory tract disorder in children attending different hospitals of Bangladesh (Kabir AR, Amin R, Mollah AH et al. Magnitude of respiratory disorders in Bangladesh, BMRC project 2008). The cause of bronchiolitis is mostly RSV (Kabir AR, Haq N, Amin R et al. Evaluation of hospitalized infants and young children with bronchiolitis- a multi-centre study. Mym Med J 2003; 12(2): 128-33); Kabir AR, Ruyichi U. Prevalence of viral pneumonia in WHO classified severe pneumonia. Personal communication). We are not particular in the diagnosis of bronchiolitis, rather misdiagnosing pneumonia for bronchiolitis (Kabir AR, Rahman F, Rahman A et al. Respiratory diseases the leading cause of mortality and morbidity among under five children in Bangladesh: still a far cry for optimal management even after a decade of ARI control program. In: Proceedings of the American Thoracic Society. 2005, vol-2, Abstract issue. American Thoracic Soc International Conference, may 20-25 San Diego, California, USA, page A-470). It is possible to differentiate bronchiolitis and pneumonia (Kabir AR, Haq N. Aetiology of acute lower respiratory tract infection in infancy, BMRC project 2001). We are prescribing costly antibiotics in bronchiolitis (Kabir AR, Haq N, Amin R et al. Evaluation of hospitalized infants and young children with bronchiolitis- a multi-centre study. Mym Med J 2003; 12(2): 128-33). We are not following the national guideline (Hassan R, Hossain A, Mahmud AM, Kabir AR et al. National guidelines: asthma, bronchiolitis, COPD, Asthma Association Bangladesh, 2005) for the management of bronchiolitis. Bronchiolitis can be managed only with supportive therapy like oxygen therapy salbutamol nebulisation, ensuring feeding and other supportive therapy and not even giving any antibiotics (Kabir AR, Amin R, Mollah AH et al. Management of bronchiolitis without antibiotics: a multicentre RCT in Bangladesh, submitted to Acta Pediatrica 2009). There is very low risk of associated bacterial infection in bronchiolitis (Khan MR, Kabir AR, Haq N. Septic evaluation of bronchiolitis with or without fever, FCPS-II dissertation, BCPS 2008).

Conclusion: We need to update our knowledge about the magnitude, diagnosis, differentiation from pneumonia and recent advancement in the management to remove the barriers in the management of bronchiolitis in our context.

Bronchiolitis: The Most Common Cause of LRTI, Can be Diagnosed Clinically and Managed Without Antibiotics

ARM Luthful Kabir

Total Lunc Halth Conference
13-17 October 2009, BCFCC, Dhaka

Acute respiratory tract infection (ARI) is one of the major causes of morbidity and mortality among under five children in Bangladesh. ARI alone is responsible for 33.4% of total under five deaths, 38.8% of pediatric hospital admission and 40%-60% of total pediatric OPD visits. Bronchiolitis and pneumonia are the two most important causes of lower respiratory tract infections (LRTI). In a nation wide hospital prevalence study, conducted over 43 hospitals on 5157 children, it was found that 21% under five children suffer from bronchiolitis and 11.5% from pneumonia. Doctors have the tendency to group and classify the respiratory disorders instead of correctly diagnosing the disorders. They are also misdiagnosing bronchiolitis as pneumonia. As a result, there is indiscriminate use of antibiotics, antihistamines and bronchodilators. In the largest ever multi-centre randomized control trial (RCT) conducted on 327 young children in five teaching hospitals of Bangladesh, it was shown that bronchiolitis can be well managed with only adjunct therapy but without antibiotics in the hospital settings. The symptoms and signs of bronchiolitis can be grouped as chesty and non-chesty features providing with the scope for counseling as to gradual and rapid recovery respectively.

Conclusion: Doctors need to be trained about the high magnitude of bronchiolitis and its management without using any antibiotics.

Prevalence of Viral Bronchiolitis in WHO Classified Severe Pneumonia

ARM Luthful Kabir, Ryuichi Uchida, Selim Ahmed, Bikash Sikder, Shafi Uddin Ahmed, Soofia Khatun, A Salam

Paediatric Conference
22-23 January 2010, Khuna

Background: Pneumonia is the leading cause of death of children globally as well as in Bangladesh.

Although WHO criteria define pneumonia/ALRI by symptoms and signs of the patients, radiological and virological findings of WHO severe pneumonia were not well studied. In addition, increasing cases of bronchiolitis which meet the criteria of WHO severe pneumonia are reported in Bangladesh.

Materials and Methods: From November 2007 to March 2008, Children less than 2 years who were diagnosed as severe pneumonia by WHO criteria (fast breathing and chest in-drawing) in Institute of Child and Mother Health (ICMH) were all enrolled. Chest X-ray were examined and reviewed by a radiologist, a pulumonologist, and two pediatricians. Respiratory syncitial virus (RSV), Influenza-A & B virus, and Adenovirus were detected by rapid test kit using immuno-chromatography (Alfressa, Japan). Bronchiolitis was defined clinically by runny nose, cough, chest in-drawing, rhonchi, and radiologically having any of chest X-ray findings compatible with bronchiolitis (hyperinflation, interstitial markings, and streaky density).

Results: 100 patients with severe pneumonia were enrolled during this period, all of them were tested for viruses and 78 patients were reviewed for their Chest X-ray. Chest X-ray analysis revealed increased interstitial markings: 66 cases (84.6%), hyperinflation 50 cases (64.1%), and streaky density: 45 cases (57.7%) which suggest predominant virus infection, while consolidation: 4 cases (5.1%) and alveolar infiltrates: 21 cases (26.9%) which suggest predominant bacterial infection were observed. Any virus infections were detected in 65 cases (65%). RSV was predominant: 63 cases (63%), then followed by Influenza viruses A : 5 cases (5%) and Adenovirus: 1 case (1%). Among them, two cases of mixed infection of RSV and Influenza virus A and one case of that of RSV and adenovirus were observed. A total of 59 cases of bronchiolitis were diagnosed, 45 cases were any virus positive (viral bronchiolitis), which was predominant in WHO severe pneumonia ($P<0.01$)

Conclusion: Radiological and virological analysis suggested predominance of virus infection (65%), especially viral bronchiolitis, in children with WHO severe pneumonia in Bangladesh.

Septic Evaluation of Bronchiolitis in Infants with or without Fever

Mamun Reza Khan, **ARM Luthful Kabir**

Biennial BPA Conference
7-8 June, 2012, Sylhet MAG Osmani Medical College, Sylhet

Background: Concomitant bacterial infection in bronchiolitis is usually uncommon.

Objective: A prospective case series comparative study was conducted to see the risk of serious bacterial infection (SBI) in febrile bronchiolitis compared with afebrile bronchiolitis.

Methodology: The study was conducted at Institute of Child and Mother Helath (ICMH), for a duration of 28 months in the years 2007-2008. Infants (2-12 months) with clinical bronchiolitis attending the ICMH paediatrics indoor fulfilling the inclusion criteria was enrolled in the study. Total 118 cases of clinical Bronchiolitis was enrolled according to the inclusion and exclusion criteria. Out of that 64 cases (54.2%) were in afebrile bronchiolitis group, that means bronchiolitis without fever (temp<100.4^{0}F or 38^{0}C) and 54 cases (45.8%) were in at febrile bronchiolitis group, that means bronchiolitis with fever. The data collection was done through a prefixed structured questionnaire and conducted by the principal investigator himself. Interview of the parents was taken after inclusion of the patient as a study case and then the investigations (CXR, CBC, ESR, PBF, CRP, blood culture, urine R/E, C/S, induced sputum R/E, C/S) were sent. Then the clinical presentations and radiological signs and heamatological mean values and culture reports were compared between afebrile bronchiolitis and febrile bronchiolitis groups.

Results: As a whole bronchiolitis was more common in male, complaint about fever in febrile bronchiolitis group was 96.3% whereas in afebrile bronchiolitis group 53.1%, the mean temperature in febrile bronchiolitis group was 101.3^{0}F and in afebrile bronchiolitis group was 98.9^{0}F which is statistically significant, but yet grade of fever even in study group is not high. In radiological findings, hyperinflation was 92.2% and hyperlucency 90.6% in afebrile bronchiolitis group and 82.2% and 83.3% in febrile bronchiolitis group. But the patchy opacity and consolidation were more marked in febrile bronchiolitis group (94.4% and 48.1%) than in afebrile bronchiolitis group (75% and 25%). In comparison of different hematological values, mean hemoglobin was almost same in both groups but mean ESR, mean WBC count, mean DC neutrophil count and CRP raised significantly in febrile bronchiolitis group. Culture became positive in 33.05% cases. Blood culture became positive in 20.3% of all cases. Urine culture became positive in 5.9% cases. And induced sputum became positive in 9.3%, out of 39 culture positive cases only 3 cases had more then one culture positive, out of those 3, 2 cases belonged to study group and 1 case control group, none of the cases had all 3 culture sample positive. In comparison between febrile bronchiolitis and afebrile bronchiolitis group urine and induced sputum culture results revealed no statistical significant difference. But in the blood culture in febrile bronchiolitis group total 16 (25.3%) cases and in afebrile bronchiolitis group 8(12.5%) cases

were positive and which was significant. But when the blood culture positive results compared with concomitant hematological reports in support of sepsis it revealed that in the afebrile bronchiolitis group total 8 cases were culture positive. Only in 2 cases there were WBC count more then 12000/cu mm (case no 87 and 107) but in both that cases there were CRP value 6 mg/dl and only 1 case there was neutrophil count more than 60% (case no 87) and these findings do not represent true infection. Among these cases mean WBC count was 10000/cu mm, mean neutrophil count 33.5%, mean CRP 9 and mean ESR was 16. On the other hand, in 2 cases (case no 105, 107) there were Staphylococcus (couagulase negative) and 2 cases (case no 11, 27) were Staphylococcus epidermidis which are all usually become positive due to contamination. These findings do not suggest true sepsis.

In febrile bronchiolitis group, out of 16 blood culture positive cases, there was no concomitant leukocytosis (WBC >15000/cumm) in 13 cases, no significantly raised CRP in 14 cases, no neutrophilia (>60%) in 11 cases and only in 3 cases there were very raised ESR (ESR >50 mm in 1st hour). Only in 3 cases (case no 81, 89,91) WBC count were more than 15000/cumm and among them 2 cases had no significant raised CRP and ESR. And two cases (case no 81, 89) had Staphylococcus (couagulase negative) positive which are usually become positive due to contamination. Only one case (case no 91) had all the evidence (Enterococcus positive, WBC 18000/cu mm, neutrophil 90%, CRP 24 mg/dl and ESR 92 mm in 1st hour) of sepsis. No case was found showing the growth of same organism in all 3 or at lest 2 sample of blood, urine and induced sputum. On the other hand 7 cases out of 16 cases there were Staphylococcus (couagulase negative) which are usually become positive due to contamination in febrile group. So, these results do not suggest true sepsis. And the possible cause of culture positive may be due to contamination. So, true sepsis cases supported by all evidences in afebrile and febrile bronchiolitis groups was 0 vs 1 and the difference was not significant.

Conclusion: So, as a whole we can say that possibility of bacteremia in febrile bronchiolitis and afebrile bronchiolitis are both low and there is no difference in two groups in this study.

Bronchiolitis: an out-break in Bangladesh and its Optimum Management

ARM Luthful Kabir, Md. Abid Hossain Mollah

Bangladesh Paediatric Association (BPA) - Continued Medical Education (CME)
October 2012, Shaheed Suhrawardy Medical College, Dhaka

Presently, Bangladesh is experiencing an out-break of bronchiolitis. Lot of small children are attending general physicians, pediatricians, hospital out patient department and also hospitalized in the in-patient department of Pediatrics of all hospitals with cough and respiratory distress over the last few weeks. Right now, there are 29 (30%) cases out of 98 hospitalized children with cough and respiratory distress (mostly bronchiolitis) at Sir Salimulla Medical College and Mitford Hospital, Dhaka.

Bronchiolitis is a viral self limiting respiratory disease. The children are usually below one year, particularly <6 months of age. The child can have inconsolable cry, feeding/ sleeping difficulty, restlessness, nasal flaring and increased heart rate. The child has fast breathing (>50-60 breaths/min), and wheeze/rhonchi on auscultation. Total white cell count is within normal limit (<15,000/cmm) and chest x-ray shows hyperinflation and hyperlucency i.e. large and darker lung fields in most of the cases with few streaky densities.

The diagnosis is very simple characterized by preceding runny nose followed by cough and respiratory distress (chest indrawing) and low grade fever in small children below two years of age. The supportive laboratory and radiology can help reaching the diagnosis. Management of uncomplicated severe bronchiolitis needs hospitalization, support therapy like oxygen, salbutamol/ hypertonic saline nebulization, paracetamol suspension (if febrile), and continuation of nutrition either by intravenous fluid or nasogastric tube feeding or breast feeding. Intravenous costly antibiotics (like ceftriaxone) are not necessary. Either no antibiotics or oral erythromycin can be given when antibiotics are necessary in uncomplicated cases of bronchiolitis. This has been well proved by two good studies conducted by Bangladeshi doctors and these studies have got its place in the Cochrane data base. There is high chance (up to 70%) of recurrent wheeze following an attack of bronchiolitis and it is important for counseling of the parents and further management.

The Cochrane Acute Respiratory Infectious Group have recently (2011) conducted the meta analysis and systematic review on the role of antibiotics in bronchiolitis. They reviewed research activities of last 44 years (1966-2010) and searched 559 research papers and found only five well-conducted controlled trials suitable for analysis. Three articles were from high income countries and two from resource poor countries. Fortunately, both the papers (Kabir ARML, Mollah A, Anwar KS, Rahman F, Amin R, Rahman ME, Management of bronchiolitis without antibiotics: a multi-centre randomized control trial in Bangladesh. Acta Paediatrica 2009; 98 (10): 1593-1599; and Majumder JU, Kabir ARML.

Management of bronchiolitis with or without antibiotics- a randomized control trial J of Bangladesh College of Physicins and Surgeons 2009; 27(2) : 63-69) of low income countries are from Bangladesh. Bangladesh Pediatric Pulmonology Forum (BPPF) members conducted the studies and published in these peer reviewed journals.

All the pediatricians and general practitioners will benefit going through these paper:

1. by understanding the diagnosis of bronchiolitis
2. being confident to treat uncomplicated bronchiolitis without antibiotics and
3. by limiting the indiscriminate use of antibiotics not misdiagnosing pneumonia for bronchiolitis.

If we can correctly manage bronchiolitis in terms of diagnosis and treatment, our small kids can get rid of unnecessary pricks!

How and Why we Miss Acute Bronchiolitis?

ARM Luthful Kabir, Md Ruhul Amin, Md. Abid Hossain Mollah, Shakil Ahmed, Khondker Rokonuddin, Al Amin Mridha, Kazi Selim Anwar

43rd World Congress of Lung Health,
November 13-17, 2012, Kualalampur, Malaysia

Introduction

Bronchiolitis remains the commonest cause of acute lower respiratory tract infection (LRTI) in young children. About 21% of under-five years-old (U-5) children who attend various hospitals of Bangladesh suffer from bronchiolitis whereas it is 11.5% have pneumonia. "WHO Classified severe pneumonia" was found to be viral bronchiolitis in 65% cases in one study. Though uncomplicated bronchioitis can be managed in the hospital settings without antibiotics, it is treated with antibiotics in 99% cases. Moreover, deaths resulting from bronchiolitis were observed to merge with pneumonia mounting to pneumonia-deaths. Physicians in Bangladesh are oblivious of bronchiolitis and cases of bronchiolitis are misdiagnosed as pneumonia. Alarmingly, only 15.4% of bronchiolitis cases are reported to be diagnosed correctly at the community level.

How and why physicians miss bronchiolitis?

(1) While, Acute respiratory tract infection (ARI) Control Program (since 1992) exerted a huge impact on reducing childhood morbidity and mortality in adjunct with the introduction of Integrated Management of Childhood Illness (IMCI), (since 2000) in one hand, it may have confounded the process of under-reporting or misdiagnosing bronchiolitis cases in another hand. This remains one of the plausible bases of how and why our physicians miss most of bronchiolitis cases.

Following WHO/IMCI classification, any U-5 child suffering from cough, fast breathing and/or chest indrawing is classified as 'no pneumonia', 'pneumonia', or 'very severe disease'. In Bangladesh, around 10,000 health care providers (doctors/paramedics) who had been trained on ARI control/IMCI programs in 395 upazillas (sub-districts) of the country. Doctors consider classification (according to IMCI) of respiratory tract infection as the diagnosis of ARI cases. They don't feel like using (80.5% cases) stethoscope to diagnose lower respiratory tract disorders. They concentrate more on gross audio-visual features of respiratory disorders, like cough, wheeze, stridor, feeding difficulty, fast breathing, chest indrawing etc. to 'diagnose' various forms of ARI. The management of bronchiolitis has not been emphasized duly and there is no scope to differentiate pneumonia from bronchiolitis in the IMCI training module. More astonishingly, any child died of respiratory distress are 'illogically' labeled as 'pneumonia death'.

(2) General practitioners (GPs) also have the tendency to classify respiratory tract disorders as 'ARI', 'no pneumonia', or 'pneumonia' and prescribe antibiotics to remain on safe side. Noteworthy, that none or a little scope exists in our country for refresher trainings &/or periodic orientation on common childhood diseases and this make this confused scenario in compounded jeopardy.

(3) Media publicity gave this confused issue an added complexity: the general mass got an ever-growing perceived idea that any child with respiratory distress is most likely to suffer from 'pneumonia' and but nothing is focused on bronchiolitis.

(4) The 'go-slow' role or 'reluctant' attitude of pharmaceutical companies in promoting non-antibiotic management of bronchiolitis seems to be another confounder.

(5) There is dearth of facility to isolate respiratory syncytial virus and other viruses causing bronchiolitis even in the academic institutes like institutes of child health and medical colleges to boost up the confidence of etiological diagnosis of bronchiolitis.

Conclusion: The training programs of ARI Control/ IMCI (pre-service and in-service) designed for the medical students and field level health care providers only on the management of ARI/pneumonia (without highlighting bronchiolitis) and not providing refreshers trainings/periodic updates/ orientations on childhood respiratory illness remain the principal plausible reasons for keeping bronchiolitis in an oblivion state in developing countries. Moreover, the situation has become worse with media campaigns, inert role of pharmaceutical industries and non-existing facility to isolate viruses causing bronchiolitis at least for academic purposes.

Recommendation

To improve the management of bronchiolitis, it remains imperative to include bronchiolitis in the IMCI module, focusing the major differences in their treatment, counseling & management. However, inclusion of chest x-ray (available in country's almost all rural health care facilities) remains essential for the correct diagnosis of pneumonia and bronchiolitis. The availability of virus isolation at least in some selected centers and introduction of ICD-10 classification of diseases in medical recording would go a long way to optimize the management of all diseases including bronchiolitis. The related pharmaceutical companies should be well informed about the non-antibiotic management of bronchiolitis.

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Bronchiolitis and Bangladesh

ARM Luthful Kabir, Md. Ruhul Amin, Md. Abid Hossain Mollah , Selina Khanam, Jasim Uddin Majumder, Al Amin Mridha, Sakil Ahmed, Khondoker Rokonuddin

Joint Conference CPSP & BCPS,
April 12-16, 2013, Lahore, Pakistan

Introduction: Bronchiolitis is the commonest cause of acute LRTI in young babies. The epidemic of bronchiolitis was first reported in Bangladesh during 2001-2002 and this high rate continued to prevail over the next coming years. About 21% of <5-children who attend different hospitals of Bangladesh have bronchiolitis. The case definition of bronchiolitis is very simple and purely clinical: any child <2 years of age presenting with preceding or existing runny nose, cough, chest in-drawing and rhonchi on auscultation. Respiratory syncytial virus (RSV) is the commonest cause. Increased translucency and hyperinflation are the commonest radiological features. Uncomplicated bronchiolitis can be managed in the hospital settings without antibiotics.

We are oblivious of bronchiolitis: Doctors of Bangladesh are oblivious of bronchiolitis and the cases of bronchiolitis are misdiagnosed as pneumonia. The sensitivity and specificity of diagnosing bronchiolitis by our doctors are 15.4% and 98.7% respectively. "WHO classified severe pneumonia" was found to be viral bronchiolitis in 65% cases.

Mismanagement of bronchiolitis: Bronchiolitis is treated with antibiotics in 99% cases and ceftriaxone is the commonest prescribed antibiotic. Moreover, deaths from bronchiolitis have merged with pneumonia deaths giving rise to the bulk of ARI/pneumonia deaths.

Management can be optimized: The rate of recovery of non-chesty features (e.g. feeding difficulty, sleeping difficulty, inconsolable cry, no social smile, hypoxemia etc.) is rapid in contrast to the gradual recovery of chesty features (e.g. cough, runny nose, wheeze, breathing difficulty, tachypnea, tachycardia etc.). The distinction between pneumonia and bronchiolitis is obvious if simple clinical acumen is applied. Management of uncomplicated bronchiolitis is possible without antibiotics and only supportive measures are enough in hospital settings even in low-income countries.

Conclusion: Bronchiolitis needs to be diagnosed correctly and the indiscriminate use of antibiotics should be limited.

Bronchiolitis : Recent Evidence on Diagnosis and Management

ARM Luthful Kabir

1st South Asia Paediatric Association (SAPA) Conference
and 18 Biennial BPA Conference
6-7 April, 2014, Ruposhi Bangla Hotel, Dhaka

Bronchiolitis is the leading cause of acute respiratory illness of young children. It is more common than pneumonia. The evidence based clinical practice of bronchiolitis is the outcome of research into variations of treatment and outcomes across different settings.

There is no consensus on the case definition of bronchiolitis which varies widely. Authors of recent surveillance studies have defined the presence of multiple viruses in some cases of bronchiolitis.

Presence of co-morbidities and young age remain the most important predictors of severe bronchiolitis.

Pulse oximetry plays an important role in the overall management.

There is limited role for diagnostic laboratory and imaging tests in the typical case of bronchiolitis.

Studies revealed a lack of efficacy for routine use of either bronchodilators, corticosteroids or antibiotics for treatment of bronchiolitis. Nebulized hypertonic saline might have a potential future role in the therapy.

Updates on The Management of Bronchiolitis

ARM Luthful Kabir, Md Abid Hossain Mollah, Md. Ruhul Amin

4th International Pumcon
18-20 Nov. 2015, KIB Auditorium, Dhaka

Definition: Bronchiolitis is a clinical condition characterized by runny nose followed by respiratory distress associated with wheeze in a child below 2 years of age.

Epidemiology: Bronchiolitis is the leading cause of hospitalization for infants younger than one year of age. Admissions for bronchiolitis have increased over the last decade and it has been associated with increasing morbidity and cost. It is the most common cause of lower respiratory tract infection (21%) as against pneumonia (8%).

Risk factors: Important risk factors include prematurity, male sex, overcrowding, non-breast feeding etc.

Etiologic agents: Respiratory syncytial virus (RSV) and human metapneumovirus (hMPV) are two important causes of bronchiolitis.

Pathlology: RSV causes epithelial cell necrosis, ciliary destruction of respiratory epithelial cells, and inflammatory edema of the bronchioles resulting in mucus plug formation causing bronchiolar obstruction leading to air trapping and varying degrees of lobular collapse. These mechanisms cause ventilation perfusion mismatch and ultimately hypoxemia.

Clinical features: Important features are cough, runny nose, feeding difficulty, fast breathing, respiratory distress, bloated chest, chest indrawing, wheeze and hypoxemia as reflected by pulse oximetry.

Investigations: There are no laboratory tests that are specific to bronchiolitis and such no single laboratory test can confirm or rule out the acute viral bronchiolitis. Laboratory testing for nasopharyngeal aspirate (NPA) for bronchiolitis-related viruses can support patient diagnosis. Important chest radiographical features are hyperinflation, increased translucency, increased interstitial markings and focal atelectasis.

Treatment: The cornerstone of bronchiolitis treatment remains supportive care and counseling. There is great variability in the clinical approach to treatment and there is much confusion and controversy regarding the treatment of bronchiolitis. Important modalities of treatment are managing at home, nasal suctioning, fluid and hydration therapy, supplemental oxygen, nebulised hypertonic saline (3%) as mucolytic, ventilatroy support with nasal CPAP in case of respiratory failure and Inhaled ribavirin for severely ill or high risk infants with bronchiolitis. Prevention include hand hygiene with antimicrobial soap or an alcohol based rub, exclusive breast feeding for 6 months, and passive immunization with Palivizumab for infants at high risk for developing severe bronchiolitis.

Counseling should highlight that bronchiolitis has very high degree of morbidity and low mortality (1%). There is significantly lower risk of serious bacterial infection (SBI) in case of RSV bronchiolitis. Long term sequelae include development of wheezing or asthma in later life, allergic sensitization and bronchiolitis obliterans.

Respiratory Morbidity Among Infants: A Longitudinal Study

Rahat Bin Habib, **ARM Luthful Kabir**

4th Child Pulmocon BPPF
21 November, 2015, KIB Auditorium, Dhaka

Background: Mortality and morbidity among children within the first year of life is an important indicator of the health status of a population. In Bangladesh there are many studies for childhood illness, these are all cross sectional studies. Whereas there are very few longitudinal studies or long term prospective study for childhood respiratory morbidity in our country or abroad, this is very important to determine the health status or disease pattern of children.

Methods: This is a longitudinal study during infantile period to identify the frequency, magnitude and pattern of respiratory morbidity among the same group of respondents.

Results: In this study there were 308 infants, enrolled on the day of birth in Institure of Child and Mother Health (ICMH), from the 1st July, 2014 to 31st August 2015. These newborns were followed monthly and also at the time of illness, telecommunication on 24 hours in each day. On the 31st August 2015, distinct 12 months have completed.

Among them male predominant 171 (56%) then female (44%), there 226 (73%) born by Cesarian Section (C/S), 70 (23%) by Normal Vaginal Delivery (NVD), their mean birth weight was 2903±400 grams, birth length was 48±2.70 cm, OFC was 33±1.80 cm, breast fed within 01 hour 159 (51%) neonate.

Socio demographically average mothers and fathers age were 24±4 and 34±6 years, fathers and mothers education was near to equal (10±4 and 9±3) years at 95% CI, father's occupation 101 (33%) were on private service, 85 (28%) were on business, abroad on 37 (12%) and only 5% were cultivators. In occupation 256 (83%) mothers were house wives. Minimum monthly income was 5000 taka and maximum was 1 lac taka and mode was 10000 taka. 75 (24%) fathers said they are smoker. Sixty eight percent were nuclear families and 32% live in joint families. Their sibs number 2±1 and family members 6±3. Most (73%) live in ground level (among them 53% live in tin shed house) and 24% live in 1st floor or above. All are muslims other then 04% (hindus), 19 (06%) parents are consanguineous..

Among 308 study population 228 (74%) parents maintained communication upto completion of 12 months, there 61 (20%) visited for regular anthropometric measurement with follow up, 167 (54%) connected by regular telecommunication. Here 80 (26%) were dropped out.

On disease prevalence, 98% suffered from URTI and remaining (02%) LRTI, bronchiolitis were 40 (85%) cases and bronchopneumonia 07 (15%) cases. On average each infant suffered 10 attacks of RTI in a year, it indicates nearly 01 attack in a month. Therefore, 60% children suffered repeated RTI in a month, whereas 42%, 2 times and 18%, 2 times in each month, 100% children suffered from common cold and cough. 54% parents complained about repeated vomiting (probably GER). 16 babies suffered from ASOM, in which 04 of them suffered >1 times. 13% infants suffered by measles and development of rash without fever 02% of them. There was no tonsillitis of 100% children. EBF 141 (62%) of infants.

Conclusions: This study shows that prevalence of URTI is more common than LRTI and in LRTI bronchiolitis is more common than bronchopneumonia.

Aetiology and Clinical Profile and Hospital Outcome of Bronchiolitis Among Neonates-A Study of 50 Cases

May May Hal, Md. Abid Hossain Mollah, **ARM Lutful Kabir**, Manisha Banerjee, Tafazzal Hossain Khan, Shishir Ranjan Das

4th Child Pulmocon BPPF
21 November, 2015, KIB Auditorium, Dhaka

Background: Bronchiolitis is the leading lower respiratory tract infection among infants and respiratory syncytial virus (RSV) is the commonest pathogen. Although the disease is well discussed among infants, the clinical profile is not well studied among the neonates.

Objective: The present study was conducted to evaluate the clinical profile and outcome of acute bronchiolitis among the neonates.

Methods: This cross sectional observational study was conducted in Special Care Neonatal Unit (SCANU) of Dhaka Medical College Hospital, Dhaka Shisu Hospital and Azimpur Maternity Hospital, Dhaka, Bangladesh during 1st February 2011 to 28th February 2012. A total of 50 full term neonates' ages ranging from day 0 to 30 days, who presented with respiratory distress following an upper respiratory catarrh and had no features of pneumonia on chest Xray were enrolled in this study. After enrollment, detailed clinical and hematological assessments were done. Nasopharyngeal aspirates from the patients were tested for RSV by RSV antigen kits (SAS TM, RSV Alert, San Antonio, USA). All data were recorded in a pre-tested questionnaire and analysed by SPSS 19.0 software for windows.

Results: The mean body weight of the cases was 3.26 ± 0.74 Kg. and the mean age of presentation was 15.88 ± 9.18 days. Forty six percent (23/50) neonates came from low income family and 12% (6/50) had significant family history of atopy. Males were 72% (36/50) and females were 28% (14/50) with male to female ratio of 2.58:1. Out of 50 cases, 32 came with first attack of wheeze and 68% had severe chest retraction.

Feeding difficulty was present in all neonates and 64% had low grade fever. Ronchi was noted among 64% of cases and 48% had palpable liver. Leukocytosis was present in 24% cases and the mean value of total WBC count, ESR, Hb and CRP were 10864±2830/cmm, 7.04±2.166mm in 1st hour, 12.63±3.21gm/dl and 6.4±0.52mg/l respectively. CRP was positive in 20% cases. Chest X-ray was normal in 32% (16/50) cases. More than half of the patient had increased translucency (26%), increased interstitial markings (22%) and hyperinflation (20%). In radiological findings, increased translucency, hyperinflation, and increased interstitial markings were found in 10 (31.2%), 7 (21.8%), 9 (28.1%) cases of first attack of wheeze while in runny nose neonates these were 3(16.6%), 3(16.6), 2(11.1%) respectively. RSV was negative in all the study cases. The treatment was mainly supportive through oxygen inhalation, nebulization with normal saline, salbutalmol and parenteral antibiotics. Mean duration of hospital stay was 4.40 days . Out of 50 neonates, 48 neonates improved completely and 2 patients were referred to specialized centre as they developed respiratory failure.

Conclusion: Clinical presentation of acute bronchiolitis among the neonates is not different from those in infants. However, RSV was not the aetiological agent in this age group.

Anaemia is A Risk Factor of Bronchiolitis

Farhana Karim, **ARM Luthful Kabir**

4th Child Pulmocon, BPPF
21 November, 2015, KIB Auditorium, Dhaka

Background: Bronchiolitis is a common lower respiratory tract infection and anaemia is also very common in children. Anaemia is a risk factor for many conditions like recurrent infection, developmental delay, febrile sezure and breath holding spell.

Objective: This study was conducted to explore the association between anemia with bronchiolitis.

Methodology: This case control study was carried out in the Department of Paediatrics, Sir Salimullah Medical College & Mitford Hospital (SSMC & MH) Dhaka, during the period of September 2011 to August 2012. Hematological investitations were done like Hb%, RBC indices, serum iron and TIBC level in children with bronchiolitis and children without bronchiolitis and also to find out the risk factors associated with bronchiolitis. For this purpose, a total number of 92 consecutive patients were enrolled in this study, that of 50 children with bronchiolitis was considered as cases and 42 children without bronchiolitis was considered as controls, where the control was matched with age and sex. The investigation of serum ferritin level was not done because it is not reliable in cases with infections as it increases as acute phase protein (Ryan et al 1997). The following observations and results were obtained in this study.

Results: The mean age was found 8.1±5.5 month in cases and 7.9±6.5 months in controls. Male female ratio was 1.3:1. Formula milk and antibiotic intake were significantly (P<0.05) higher in cases. Formula feeding and antibiotic intake were 18.00 and 2.73 times increased in bronchiolitis cases respectively. Overcrowding, cooking by wood/kerosene, and passive smoking in family were statistically significantly (P<0.05) higher in cases with an odds ratio of 19.25, 21.12 and 9.45 respectively, whereas older sib in family and family history of atopy were almost similar between two groups. MCV, MCH and MCHC were significantly (P<0.05) lower in cases whereas WBC was almost similar between two groups. Microcytic hypochromic anemia and normocytic anemia were significantly (P<0.05) higher in cases and controls respectively. The mean serum iron was significantly (P<0.05) lower in cases. Low serum Iron level was found to be risk factor for bronchiolitis with an odds ratio of 13.81 with 95% confidence interval of 4.12 to 46.26 and the significant P value of 0.001. The mean TIBC was significantly (P<0.05) higher in cases with an odds ratio of 3.86.

Conclusion: Microcytic hypochromic anemia, low serum iron and higher TIBC were associated in children with bronchiolitis. Low serum Iron level was found to be risk factor for bronchiolitis with an odds ratio of 13.81.

Radiological Features of Bronchiolitis - A Study of 198 Cases

Afsana Mukti, AS Mohiuddin, Bikash Majumder, **ARM Luthful Kabir**

5th Child Pulmocon, BPPF
1-2 December, 2017, BSMMU, Dhaka

Background: Bronchiolitis is the commonest cause of acute lower respiratory tract infection (ALRTI). The radiology of bronchiolitis was not well studied in our context.

Objectives: The study was conducted to identify the various radiological features of bronchiolitis.

Methods: It was a cross sectional study and conducted in Dhaka Medical College Hospital and Institute of Child and Mother Health (ICMH), Matuail Dhaka in 2008. The diagnosis of bronchiolitis was made on the basis of runny nose followed by respiratory distress and chest indrawing and rhonchi on auscultation in a child below 2 years of age. Children with atopic conditions, congenital heart disease, immunodeficiency (consanguinity between parents with recurrent chest infection) and chronic lung disease (bronchopulmonary dysplasia) and parents not giving consent were excluded from the study. A total of 198 cases of bronchiolitis who fulfilled the inclusion criteria were analysed. A structured questionnaire was filled up by one of the investigators (Afsana Mukti) while taking face to face interview of the care taker (mostly mothers). Detailed history was taken and full physical examination was done. Chest X-ray and necessary investigations were done immediately after admission. All X-ray films were studied by two qualified radiologists who were kept blind about the patients' conditions and finally all the CXRs were reevaluated by one pediatric pulmonologist. Two radiologists reported independently and the documentation was recorded in printed forms. The consensus report of the radiologists was accepted as positive findings. The individual report of one radiologist, not supported by another radiologist was taken positive when the pediatric pulmonologist agreed. An obvious finding missed out by both the radiologists was included when the pediatric pulmonogist thought positive.

Results: Bronchiolitis was found more (73%) common in children below 6 months of age and in male children (73%). In 100% cases, the children had runny nose, cough, breathing difficulty, chest indrawing and rhonchi on auscultation. Other important features were feeding difficulty (84%), crepitation (82%), wheeze (77%), sleeping difficulty (76%), restlessness (66%), nasal blockade (57%) and nasal flaring (56%). The mean WBC count was 9917/cmm with 40% neutrophils and mean CRP was 15.3 mg/dl.

The radiological features were as follows in order of frequencies: hyperinflation (85%), increased translucency (60%), increased interstitial markings (60%), streaky densities (44%), dirty lungs (33%), confluence of opacities (16%), ground glass opacity (9%), consolidation (8%), patchy opacity (4.5%), collapse (1.5%) and normal (1.5%).

Conclusion: The most common radiological features of bronchiolitis were hyperinflation, increased translucency, increased interstitial markings and streaky densities.

Practice of National Guideline in Management of Acute Bronchiolitis in a Tertiary Care Hospital

Nilofar Yasmin, Md. Abid Hossain Mollah, **ARM Luthful Kabir**

5th Child Pulmocon, BPPF
1-2 December, 2017, BSMMU, Dhaka

Background: Acute bronchiolitis is a common illness accounting for $500 million annually in hospitalizations. Despite the frequency of bronchiolitis, its diagnosis and management is variable. To address this variability, the national guidelines: asthma, bronchiolitis, COPD was developed in 2005 by Asthma Association, Bangladesh.

Objective: To observe whether physicians are diagnosing and treating bronchiolitis according to national guideline.

Study design: Observational study.

Study setting and period: Dhaka Medical College and Hospital (April 2014-April 2015).

Participants: All children of 1 month to 24 months age group who were admitted in DMCH and were diagnosed as acute bronchiolitis were enrolled in the study.

Methods: After including bronchilitis patients the diagnosis and management given by the physicians (Either Interns or Honorary medical officer or assistant Registrar or Registrar) to the child at the time of initial admission were documented from hospital documents. Attendant (preferably mother) were interviewed to find out whether counseling was done. It was noted whether it was in favor of bronchiolitis or not.

Results: Among the 50 patients who were finally analyzed it was found that chest X ray was done in all the patients (100%). Invasive procedures like complete blood count and C reactive protein was done in 16 (32%) patients and 4 (8%) patients respectively. All the children (100%) were treated with parenteral antibiotics, oxygen inhalation and nebulized bronchodilator. Forty six (96%) cases was given iv fluid to maintain hydration. Oral corticosteroid was used in 3 (6%) of patients. In 2 (4%) patients oropharyngeal suction was given. In one case NG tube feeding was given. Most commonly used antibiotic was ceftriaxone 52%.Ampicillin and gentamycin in combination was used in 18 (36%) cases. Only 2 (4%) patients were counseled.

Conclusion: In evaluation and diagnosis of bronchiolitis guideline is more or less followed but in treatment there is a wide variation from guideline.

Oxygen Saturation Targets in Infants with Bronchiolitis on Discharge – A Randomized Trial with Economic Evaluation

Sukla Shaha, **ARM Luthful Kabir**

5th Child Pulmocon, BPPF
1-2 December, 2017, BSMMU, Dhaka

Introduction: There are differences in opinion regarding oxygen saturation (SpO2) targets for management of acute bronchiolitis in infants. Different guidelines recommend different oxygen saturation targets. The primary objective of this study is to set a target oxygen saturation of 90% versus 94% for discharging an infant with acute bronchiolitis considering its efficacy and economic implication in mind. Secondary objective is to evaluate the safety of oxygen saturation of 90% versus 94% after discharging an infant with acute bronchiolitis.

Methods: Infants aged between 6 weeks and 12 months of age presented to Emergency or Out Patient Department (OPD) of Paediatrics of SSMC & MH were randomized. Supplemental oxygen was given up to SpO2 ≥ 94 % to group I and SpO2 ≥ 90 % to group II. The study infants were considered fit for discharge from hospital once they had attained and maintained stable SpO2 ≥ 94 % to group I and SpO2 ≥ 90 % group II for 4 hours and oral feeding established at 75% or more of their expected daily intake. The primary outcome was to see the time taken to fit for discharge on the basis of feeding reestablished, return of social smile, disappearance of hypoxemia and fever. Secondary Outcomes were evaluated by interviewing parents on discharge over phone call after 24 hours and 7 days of discharge.

Result: Total 100 patients were recruited in this study who met the inclusion criteria. The mean age was found 5.47±3.69 months and 5.57±3.47 months in group I and group II respectively. The mean duration of O2 saturation target achieved with supplemental oxygen was found 30.4±11.4 hours in group I and 25.9±9.9 hours in group II. Presenting Complaints, temperature, total expenditure, duration of hospital stay were almost alike between two groups. The duration of O2 saturation target achieved with supplemental oxygen was significantly higher in group I. Re-visit needed due to same feeding and parental perspective of back to normal were almost alike between two groups during 24 hours after discharge and 7 days after discharge.

Conclusion : Therefore, target oxygen saturation of 90% could be clinically effective, safe and economical for discharging an infant with acute bronchiolitis. However, more large scale radomized trials are needed to confirm the outcome of this study.

Magnitude of Lower respiratory tract infection (bronchiolitis and pneumonia) among the under five children attending an upazilla hospital of Bangladesh

Bidhan Chandra Podder, **ARM Luthful Kabir**

Background : Lower respiratory tract infection (LRTI) is the major causes of morbidity and mortality in under 5 children. The two most important causes of LRTI in children are bronchiolitis and pneumonia.

Objectives: This study was conducted to understand the magnitude of pneumonia and bronchiolitis in a upazila hospital of a southern district of Bangladesh, to understand the ability of upazila hospital doctors to diagnose pneumonia and bronchiolitis based on clinical presentation and physical findings and also to find out the different modalities of treatment of pneumonia and bronchiolitis given by upazila hospital doctors.

Methodology: This cross sectional study was conducted in UHC, Sreepur, Magura for a period of 1 year. Total 600 cases between 1 month to 5 years of age were enrolled in the study. The inclusion criteria were any child between 1 month to 59 months presented with respiratory symptoms including cough/runny nose or breathing difficulty. For pneumonia diagnostic criteria was fever and cough with fast breathing, lower chest wall indrawing and coarse crackles on auscultation. For bronchiolitis diagnostic criteria was runny nose followed by breathing difficulty, chest indrawing and rhonchi on auscultation in children less than 2 years of age.

Results: The study included 600 children, in OPD 400 (66.7%) and in IPD 200 (33.3%). There were 376 (62.7%) male and 224 (33.3%) female cases, male female ratio being 1: 1.8. The age breakdown of children were ≤ 6 months 96(16%), 7-12 months 126(21%), 13-24 months 159(26.5%), and 25-59 months 219 (36.5%). Out of 600 cases upazila hospital doctors diagnosed pneumonia in 234 (39.0%) cases, bronchiolitis in 36 (6.0%) cases and other respiratory diseases 330 (55.6%) cases. On the contrary according to clinical criteria of this study, pneumonia was diagnosed in 135 (22.5%) cases, bronchiolitis was diagnosed in 184 (30.7%) and other respiratory diseases in 281 (46.8%) cases. So upazila hospital doctors over diagnosed pneumonia and under diagnosed bronchiolitis.

Common respiratory diseases diagnosed by upazila hospital doctors were ARI in 277(46.2%), severe pneumonia in 120(20.0%), pneumonia in 88(14.7%), bronchiolitis in 36(6%), very severe pneumonia in 26(4.3%), cough or cold in 48(8.0%), asthma in 4(0.7%) and others in 1(0.2%) cases.

Local hospital doctors diagnosed pneumonia as ARI in 43(43/135;31.9%) and bronchiolitis as ARI in 50 (50/184;27.2%) cases. They correctly diagnosed pneumonia in 85 (85/135;63%) and bronchiolitis in 18(18/184;9.8%) cases.

Bronchiolitis was treated with oral antibiotics in 95 (51.6%), parenteral antibiotics in 86(46.7%), oral bronchodilator in 123 (66.8%), antihistamine in 52(28.3%), nebulization with salbutamol in 34 (18.5%), paracetamol in 11 (6.0%) and oxygen inhalation in 10(5.4%) cases. Pneumonia was treated with parenteral antibiotics in 59 (43.7%), oral antibiotics in 58(43%), oral bronchodilator in 87(64.4%), nebulized salbutamol in 24 (17.8%), oxygen inhalation in 20(14.8%), antihistamine in 26(19.3%) and paracetamol in 7 (5.2%) cases.

Most common antibiotics used for bronchiolitis was ceftriaxone in 86(49.4%) followed by cotrimoxazole in 25(14.4%), amoxicillin in 19(10.9%), cefixime in 8(4.6%), cephradine in 8 (4.6%), and azithromycin in 7(4%) cases. Pneumonia was treated mostly with amoxicillin 37(28.5%) followed by ceftriaxone in 32 (24.6%), cotrimoxazole in 19 (14.6%), cefixime in 13(10%), erythromycin in 6(4.6%), ampicillin and gentamycin in 7(5.4%) and cephradine in 7(5.4%) cases.

Conclusion: About one third of the respiratory cases were bronchiolitis and one fourth were pneumonia. Upazila hospital doctors correctly diagnosed pneumonia in 63% and bronchiolitis in 10% cases. There was overdiagnosis of pneumonia and underdiagnosis of bronchioitis by the upazila hospital doctors. Ceftriaxone was the commonest antibiotic used in case of bronchiolitis and amoxycillin in pneumonia. There was inappropriate use of antibiotic in cases of bronchiolitis and also in pneumonia.

Efficiency of Nebulized Hypertonic Saline Versus Normal Saline And Salbutamol In Treating Acute Bronchiolitis in A Tertiary Hospital - A Control Trial

Rumi Myedull Hossain, Md. Abid Hossain Mollah, **ARM Luthful Kabir,**
Rokeya Khanam

Background: Although, bronchiolitis is the leading lower respiratory tract infection among infants, data on efficacy of nebulized hypertonic saline in children with acute bronchiolitis especially in developing countries are limited.

Objective: To evaluate the efficacy of nebulized hypertonic saline in children with acute bronchiolitis in the improvement of clinical features and decrease length of hospital stay.

Methodology: The study was a randomized control trial carried out in the Department of Paediatrics, Dhaka Medical College Hospital (DMCH), Dhaka between January 2013 to December 2013. A total 100 children from 1month to 24 months of age irrespective of sex with clinical presentation of bronchiolitis admitted in the paediatric wards of DMCH were included in the study and were randomly assigned to either 4ml 3% hypertonic saline nebulization (Group I= 50) or to 4ml normal saline and 0.4ml ml salbutamol nebulization (Group II= 50). The therapy was repeated 8 hourly every day for 120 hours.

Results: The clinical severity scores (CS) based on respiratory rate, wheezing, chest retraction and general conditions at baseline on the first day of treatment were 9.0±1.0 in Group I and 9.3±1.8 in Group II (not significant). The study demonstrated that clinical severity and oxygen saturation in room air improved by three days but the reduction was more significant in children who received nebulized hypertonic saline compared to those who received nebulized normal saline and salbutamol. The cases of Group I required a shorter duration of oxygen therapy compared to those of Group II (15±6.0 hours vs 26.4±5.4 hours. $P < 0.05$). Forty seven patients (94%) were discharged within 72 hours of treatment in Group I and 29 patients (58%) in Group II. Length of hospital stay was shorter in Group I 58.1±22.0 hours compared to Group II 74.7±27.2 hours. None of the cases of any group encountered any side effects due to study drugs.

Conclusion: 3% Hypertonic saline nebulization significantly reduces clinical severity and length of hospital stay in case of acute bronchiolitis in comparison to normal saline and salbutamol nebulization.

Recovery of Children from Pneumonia and Bronchiolitis (ALRTIs)

Naima Sultana, Md. Abid Hossain Mollah, **ARM Luthful Kabir**

Backgrounds: Children are mostly the victims of pneumonia and bronchiolitis for which they are often hospitalized. In a study conducted in South Africa revealed that the mean duration of illness in case of bronchiolitis was 12 days and that of pneumonia was 3 weeks to 6 weeks. It is important to know the recovery Acute Lower Respiratory Tract Infections (ALRTIs) like pneumonia and bronchiolitis in our country.

Objective: To determine the recovery of different clinical features (symptoms and signs), length of stay (LOS) and outcome of two common LRTIs viz. pneumonia and bronchiolitis.

Methods: A cross-sectional analytical study was done in department of pediatrics of Dhaka Medical College Hospital during the period of October 2013 to September 2014. Patient age less than 5yr presented with pneumonia and bronchiolitis were studied. Pneumonia was diagnosed on the basis of fever, cough, breathing difficulty, chest indrawing, fast breathing, bronchial breath sound or crackles on examination and consolidation or patchy opacity in chest X-ray and bronchiolitis on the basis of presence of runny nose followed by cough, breathing difficulty and wheeze on auscultation in a child below 2 yrs. Cases of pneumonia were treated with standard protocol of WHO and cases of bronchiolitis were treated with that in national guideline. The cases were followed up 12 hourly for 8 days using case collection sheet by monitoring 17 clinical features viz. cough, runny nose, breathing difficulty, feeding difficulty, no social smile, restlessness, sleeping difficulty, nasal blockade, chest indrawing, nasal flaring, cyanosis, impairment of consciousness, inconsolable cry, documented fever, fast breathing, crackles and rhonchi.

Results : B*aseline selected clinical-socio-demographic parameters.*
There were 54 cases of pneumonia and 54 cases of bronchiolitis. The cases were similar in terms of socio-demographic status and some clinical features. Male children were more vulnerable to pneumonia (70.4%) and bronchiolitis (63%) than female counterparts (29.6% and 37.0% respectively, p=0.414). The mean weight of children in pneumonia (6.0 kg) and bronchiolitis (6.8 kg, p=0.82). The following clinical features were also comparable in both groups viz. cough (100% vs 100%) breathing difficulty (100% vs 100%), feeding difficulty (92.6% vs 96.3%), chest indrawing (92.6%vs 96.3%). The dissimilar clinical features were fever (100% vs 77.8%, p<0.001), runny nose (40.7% vs 100%, p<0.001% sleeping difficulty (92.6% vs 77.8%, p<0.03) wheeze (29.6% vs 100%, p<0.001, crackles (100% vs 18.5%, p<0.001).

Dynamics of improvement in clinical features:
Significant number of cases of pneumonia did not improve from breathing difficulty (40.7%), feeding difficulty (40.7%), restlessness (16.7%), sleeping difficulty (76.9%), chest indrawing (63%), documented fever (54%) within 3 days, but more than 90% cases of bronchiolitis recovered from above mentioned clinical features (P<0.001). Social smile returned to only 68% in case of pneumonia but 100% cases of bronchiolitis (p<0.001) within 4 days. Almost 89% cases of pneumonia and 100% cases of bronchiolitis recovered. LOS was 5.8±2.1 days in pneumonia and 3.2 days in bronchiolitis P<.001). Mortality was higher in cases pneumonia (3.7%) than cases of Bronchiolitis (0%).

Conclusion: It is to be concluded that recovery of clinical features of bronchiolitis were faster than those of pneumonia. The LOS was shorter in brochiolitis than the pneumonia cases.

02 Asthma

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Original Article *Bangladesh J Child Health 1996; Vol. 20 (4) : 104-108*

Inpatient Management of Childhood Asthma in an Advanced Centre

ARM Luthful Kabir, Peter Van Asperen, Ralph Hanson

Objective : To document the management of acute asthma in a tertiary care paediatric hospital in a developed country.

Design : A retrospective case series study.

Setting : Royal Alexandra Hospital for Children (RAHC), NSW, Australia.

Outcome measures: Investigations performed, anti-asthmatic medications employed, hospital outcome, asthma education and follow up arrangements.

Results: One hundred and four children admitted to RAHC with acute asthma were studied. There were 67 (64%) males and 37 (36%) females with an age range of 12 months to 12 years and a mean age of 66.2 months. The mean age of first diagnosis of asthma was 27.7 months. Thirty two (30%) children were on regular medication. A family history of atopy was present in 66 (63%) cases with 55(53%) in first degee relatives. Twenty one (20%) children presented with their first episode of asthma. A chest X-ray was performed in 34 (33%) cases overall but 12 (57%) in first episodes of asthma. Oximetry was performed in all cases and oxygen supplementation required in 61 (59%) children. Nebulised salbutamol and ipratropium bromide with oral prednisolone were sufficient for management of acute asthma in 89 (85.5%) cases. Only 6 (6%) children required ICU management and no patient needed ventilation.

Only 4 (4%) children required chest physiotherapy. Provision of asthma education was documented in 63 (60%) families. The mean duration of hospitalisation was 3.2 days with a range of 1 to 9 days. AH children were discharged to the care of the parents with no mortality.

Conclusion: The combination of nebulised salbutamol and ipratropium bromide with oral prednisolone supported by asthma education and subsequent follow-up arrangements were sufficient in the majority of patients with acute asthma.

Original Article (Indexed) *J Quality Clinical Practice 1998;18(3):187-93.*

Is Asthma Documentation Improved by Computer-facilitated Data Entry?

ARM Luthful Kabir, Hanson R, Mellis CM, van Asperen PP

Objective: The documentation of acute asthma in written medical records was compared with data entered into a Computer-Assisted Triage System (CATS) in 104 children who presented to the emergency department and subsequently admitted to the Royal Alexandra Hospital for Children, Sydney.

Methodology: A total of 65 items in 5 categories were analysed and satisfactory documentation was defined as the recording of a specific item in more than 80% of records (written or electronic).

Results: Satisfactory documentation was observed for all 6 items in visit details and 9 out of 10 items in triage details for both recording systems. Nursing observations were better documented in the medical record than in CATS (87 vs 25%; kappa = 0.63). Documentation of medical details was also worse in CATS (75 vs 25%; kappa = 0.24) and the documentation of asthma severity was poor in both systems (31 vs 0%; kappa = 0.31).

Conclusion: Attempts to improve asthma documentation through the development of a computerized medical record have highlighted further barriers to documentation.

Original Article *Bangladesh J Child Health 1999; Vol. 23 (3/4) : 43-47*

Prevalence of Wheeze and Asthma in Children of a Coastal Community of Bangladesh

ARM Luthful Kabir, AKM Fazlur Rahman, Ma Mannan, Sanchay Kumar Chanda, Abul Taimur Chowdhury

Objective: A survey was conducted to determine the prevalence of wheeze and asthma in children of a coastal community.

Methodology: Stratified random sampling method was used for selection of children. Nine hundred children were selected from randomly selected 30 villages of all 340 of Chakaria Thana. Face to face interview of the parents was taken to collect data using a structured questionnaire.

Results: The prevalence of wheeze ever (life time wheeze) was 25.9%, recent wheeze (wheeze in last 12 months) 23%. About 22% mother had the idea that her child had asthma and in 13.4% cases asthma was diagnosed by the local doctors. The prevalence of night cough was 39.7% and 34.9% children used to wake up from sleep coughing. The prevalence of 'asthma' (having all the above six features of wheeze ever, recent wheeze, mothers' idea of asthma in her child, diagnosis of asthma by doctors, night cough and waking at night coughing altogether in a child) was found to be 11.8%. Of all the parents, 228 (25.3%) parents consulted with doctors for their wheezy children, of which allopathy (53.7%) and homeopathy (16.7%) were main modes of therapy. Family history of asthma was found in 20.2% cases. Almost all mothers (98.6%) had no idea about inhalation therapy in asthma.

Conclusion: It is concluded that the prevalence of wheeze and asthma in children of Chakaria is very high (12%).

Original Article (Indexed) *International Journal of Epidemiology 2002;31:483-488*

Self-reported Asthma Symptoms in Children and Adults of Bangladesh: Findings of the National Asthma Prevalence Study

M Rashidul Hassan, **ARM Luthful Kabir**, Asif M Mahmud, Fazlur Rahman, M Ali Hossain, K Salfuddin Bennoor, Md. Ruhul Amin and M Mostafizur Rahman

Background: No population-based studies to determine the magnitude of the asthma problem have been carried out in Bangladesh. This study aimed to define the prevalence of asthma as well as to identify the risk factors of asthma in the general population of Bangladesh.

Methods: A cross-sectional study was conducted from January 1999 to August 1999 on 5642 Bangladeshi people. Data were collected from randomly selected primary sampling units of 8 municipality blocks of 4 large metropolitan cities, 12 municipality blocks of 6 district towns and 12 villages of 6 districts chosen randomly from all 64 districts of the country. Face-to-face interviews were performed with the housewives or other guardians at the household level using a structured questionnaire.

Results: The prevalence of asthma (wheeze in the last 12 months) was 6.9% (95% CI: 6.2-7.6). The prevalence of other asthma definitions were: ever wheeze (lifetime wheeze) 8.0% (95% CT : 7.3-8.7); perceived asthma (perception of having asthma) 7.6% (95% CI: 6.9-8.3); doctor diagnosed asthma (diagnosis of asthma by any category of doctor either qualified or unqualified) 4.4% (95% CI: 3.9-4.9). The prevalence of asthma in children (5-14 years) was higher than in adults (15-44 years) (7.3% versus 5.3%; odds ratio [OR] = 1.41. 95% CI: 1.09-1.82). Asthma in children was found to be significantly higher in households with ≤ 3 people than in larger households (OR = 2.20, 95% CI: 1.24-3.20). The low-income group (OR = 1.41, 95% CI: 1.04-1.92) and illiterate group (OR = 1.51, 95% CI: 1.01-2.24) were more vulnerable to asthma attacks than the high-income group and more educated people, respectively.

Conclusions: Asthma in Bangladesh appears to be a substantial public health problem: an estimated 7 million people including 4 million children suffer from asthma- related symptoms.

Keywords Asthma, wheeze, prevalence, population-based study, Bangladesh

Introduction

Asthma is a substantial health problem among children and adults worldwide, with increasing prevalence rates in many countries[1]. If 10% of children and 5% of adults have asthma, figures that are conservative for western countries1 but may be overestimates in some developing countries, the global burden of asthma is in the order of 130 million people. Mortality rates from asthma in western countries vary between one and five per 100 000, and result in some 60 000 deaths annually, many of which occur in young people and are preventable.[2] International comparisons of prevalence and characteristics of asthma have

been greatly facilitated by the completion of two major initiatives in asthma epidemiology—the European Commission Respiratory Health Study (ECRHS)[3] and the International Study of Asthma and Allergies in Childhood (ISAAC).[4] The first phase of ISAAC has been completed in 156 collaborating centres of 56 countries covering a population of 721 601 children.[5] So far, only one study[6] has been conducted to determine the prevalence of asthma in Bangladesh. Tt was conducted on children in a coastal region and showed the prevalence of asthma to be 11.8%. Since the nationwide prevalence of asthma was not known, this study was undertaken to determine the prevalence and associated factors of asthma and wheeze in Bangladesh in all age groups. It was conducted under the joint auspices of Asthma Association and The Chest and Heart Association of Bangladesh with collaboration from government health authorities, local medical practitioners and field workers.

Methods

This was a cross-sectional prevalence study, which quantified the distribution of asthma in the Bangladeshi population. This survey was conducted from January 1999 to August 1999.

Sampling and identification of the households

A multi-stage stratified random sampling design was followed. The whole country was stratified into three major strata: metropolitan, other urban and rural areas. The primary sampling unit (PSU) for the rural areas was village and that for urban areas was municipality block (moballa). Data were collected from 14 metropolitan centres, 12 other urban centres and 12 rural centres. These centres were selected randomly. Twenty-five households for the metropolitan strata and 34 households for other urban and rural strata were selected randomly from each centre. On average, each household was considered to consist of five members. All members of the selected households were included in the survey.

Data collection procedure

Eight teams were formed for data collection. All members of the teams were physicians led by pulmonologists. In each household, face-to-face interviews were performed with the housewives or other available people using a pre-tested structured questionnaire (prepared on the basis of studies of ECRHS,[3] ISAAC[4] and Ushcrwood et al[7]) to collect data about all mem¬bers of the household. Information regarding the household was recorded on the first page of the questionnaire; separate questionnaires were used for each individual member of the household.

Definitions

Children were defined as those aged 5-14 years, adults as people aged 34 5 years. Children aged <5 years were excluded from the study. Assessment of the economic status of the families was based on questions on family income and expenditure in the month preceding the interview.

'Surplus' meant that income exceeded the expenditure. This is the affluent group having an approximate monthly income >Tkl5 000 (>US$300) per month. 'Balance' meant almost equal income and expenditure. This group comprises people with middle income having an approximate monthly income between «Tkl 5 000 and 3Tk3000 (=£US$300 and 3USS60) per month. 'Deficit' indicated when expenditure exceeded the income. This is the poor group having an approximate monthly income <Tk3000 (<US$60) per month.

Wheeze was defined as the whistling sound arising from the chest and not from the nose or throat. Asthma prevalence was defined as the prevalence of recent wheeze (in last 12 months). Ever wheeze was wheeze any time in the past. Doctor diagnosed asthma was the asthma diagnosed by any category of doctor (either qualified or quack). Perceived asthma was the perception of having asthma in adults by themselves or in children by the parents. Night cough was defined as cough at night in the absence of any chest infection or heart disease in last 12 months. 'Night cough, waking' was cough at night, which woke up the person, in the absence of any chest infection or heart disease in the last 12 months.

Statistical analysis

The prevalence of asthma and its different categories were estimated with exact binomial 95% CI. The $\chi 2$ test for trend was used for the difference between proportions. Age-standardized prevalence rates were calculated for the populations of metropolitan, other urban and rural areas using direct method of standardization. Adjustment was made using the Bangladeshi population of 1991 as reference.[8] Unadjusted odds ratio (OR) with 95% CI based on observed prevalence were calculated to compare the patients with asthma to subjects without asthma. Multiple logistic regression analysis was applied to adjust for confounding among risk factors and to determine the most influential factors on asthma prevalence. The adjusted OR was calculated with a model that included age, sex, household size, economic status, schooling and smoking behaviour. All analyses were performed using SPSS version 7.5 for Windows.

Results

A total of 963 families were studied covering 5642 people. Table 1 shows the population characteristics of the studied population.

The prevalence of recent wheeze (asthma) was 6.9% (95% CI: 6.2-7.6). The distribution of different categories of asthma definitions among children (5-14 years), adults (15—44 years) and all ages (5+ years) is shown in Table 2. Table 2 demonstrates that the prevalence of asthma in childhood (5-14 years) was higher than that in adults (15-44 years) for all categories of asthma except night cough and 'night cough waking' which were more prevalent in adults.

The prevalence of asthma was similar in metropolitan areas 6.6% (95% CI: 5.5-7.8), other urban areas 7.8% (95% CI: 6.5-9.05) and rural areas 7.0% (95% CI: 5.7-8.0), when age was adjusted for.

Younger children of 5-9 years and adults of 35-44 years were more likely to suffer from asthma than children aged 10-14 years or younger adults, respectively (Tables 3 and 4). Small households ($\leq$3 members) were found to be more vulnerable (OR = 2.20, 95% CI: 1.24-3.20) to childhood asthma than larger households ($\geq$7 members). When considering all age groups, the 'deficit' group (OR = 1.41, 95% CI: 1.04-1.92) as well as the illiterate group (OR = 1.51, 95% CI: 1.01-2.24) were found to be more vulnerable to asthma attacks than the 'surplus' group and the more educated group, respectively.

The risk of asthma was greater among active smokers than non-smokers. The group most affected by asthma were the smokers with a history of smoking of more than 15 pack-years

Table 1

Population characteristics (n = 5642)

Characteristics	No.	Percentage (%)
Sex		
Male	2881	51.1
Female	2761	48.9
Age distribution (years)		
5-14	1571	27.8
15-44	3006	53.3
45+	1065	18.9
Economic status of households (n = 963)		
Surplus budget	252	26.2
Balanced budget	428	44.4
Deficit budget	278	28.9
No reply	5	0.5
Education level		
Illiterate	1327	23.5
Primary (5 years of schooling)	1818	32.2
Secondary (10 years of schooling)	1566	27.8
>Higher secondary	931	16.5
Occupations		
Students	1868	33.1
Housewives	1322	23.4
Service holders	580	10.3
Agricultural work	374	6.6
Day labour	164	2.9

(OR = 2.37, 95% CI: 1.04-5.41), as compared with the non-smokers.

When considering only the oldest age group (45+ years), asthma was found to be more prevalent in illiterate people (OR = 2.69, 95% CI: 1.17-6.15) and populations living in other urban areas (OR = 1.69, 95% CI: 1.05-2.70).

Discussion

This population-based study confirms that the prevalence of asthma in Bangladesh is high. The prevalence among children was found to be higher than among adults. Children under 5 years were excluded from the study. It seems likely that respiratory viral infections have an important part to play in the production of wheeze in young children.[9] Asthma is also more prevalent in people belonging to lower socioeconomic groups and adult populations of lower educational status.

This nationwide study provided the first opportunity to examine reported asthma symptoms in children and the adult population of Bangladesh. A standard methodology including stratified random sampling covering the whole country was followed. The instrument used in the study has been adapted from the ECRSH[3], ISAAC[4] and

Usherwood[7] questionnaires. Respiratory physicians were directly involved in the data collection process in the field.

Nonetheless, the study has a number of limitations. The first limitation of the study is the mode of ascertainment of asthma cases. The diagnosis was on the basis of reported symptoms ever and recent. This method of diagnosis could inflate the number of asthma cases due to similar presentation resulting from other diseases. On the other hand, the number of cases could be under-reported due to the long recall period. For population-based epidemiological studies, there is no satisfactory definition or 'gold standard' diagnostic investigation for asthma. In common with most epidemiological studies on asthma, the symptoms suggestive of asthma and parental awareness were relied upon. In the stratification of economic status, there is no standard methodology for quick assessment in the community. We grouped the studied population on the basis of preceding month's income and expenditure into 'deficit', 'balanced' and 'surplus' groups. However, this method does not reflect the actual economic status of the family as perception of solvency varies among various strata of people.

The prevalence of childhood asthma (7.3%) is much lower than that of the developed countries like the UK (29%), Australia (30%), New Zealand (30%) and USA (21%) but similar to those of regional countries like Pakistan (8%) and India (7%).[10] In general terms, higher prevalence rates have been found among children from 'westernized' countries than in developing countries in Asia and Africa. These differences may be real or may reflect study methodology. The children of Bangladesh are very prone to infections like measles, tuberculosis, and helminthes. The prevalence of measles in children under 5 years and below 9 months was found to be 1.5% and 17.8%, respectively.[11] The prevalence of tuberculosis in the Bangladeshi population was 0.5% of the total population.[12] The prevalence of geohelminths in school children (age 5-14 years) by stool microscopy showed Ascaris lumbricoides in 69%, Trichurh trichura in 39% and Ankylostoma duodenale in 8%.[13] The infections of tuberculosis and measles are protective against the development of asthma.[14-16] Helminthic infections also appear to protect against asthma.[17]

Table-II

Prevalence of asthma features by age groups

Asthma features	No. and prevalence			
	Children (5-14 years) n = 1571	Adults (15-44 years) n = 3006	Adults (45+ years) n = 1065	All age groups (5+ years) n = 5642
Ever wheeze	141 (9%)	186 (6.2%)	125 (11.8%)	453 (8.0%)
Recent wheeze	114 (7.3%)	158 (5.3%)	117 (11.0%)	389 (6.9%)
Perceived asthma	134 (8.5%)	168 (5.6%)	125 (11.8%)	428 (7.6%)
Doctor diagnosed asthma	69 (4.4%)	105 (3.5%)	73 (6.9%)	248 (4.4%)
Night cough	104 (6.6%)	273 (9.1%)	193 (18.1%)	568 (10.1%)
Night cough, waking	108 (6.9%)	226 (7.5%)	170 (16.0%)	500 (8.9%)

Table-III

Crude and adjusted odds ratio (OR) and 95% CI for the association of selected risk factors and asthma among Bangladeshi population of 5-14 years

Variables	No.	Asthmatic	Non-asthmatic	OR	95% CI	Adjusted OR[a]	95% CT
Age (years)							
10-14	875	53	822	1			
5-9	696	61	635	1.49	1.01-2.22	1.25	0.83-1.90
Sex							
Female	799	56	743	1			
Male	772	58	714	1.08	0.72-1.61	1.05	0.72-1.55
Schooling							
Secondary	296	30	266	1			
Primary	972	70	902	0.69	0.43-1.11	0.55	0.27-1.16
Illiterate	303	13	290	0.40	0.19-0.81	0.74	0.74-1.17
Geographical location							
Metropolitan	452	22	430	1			
Other urban	525	40	485	1.61	0.92-2.85	1.58	0.92-2.72
Rural	594	52	542	1.88	1.09-3.24	1.76	1.04-2.98
Economic status							
Surplus	350	20	330	1			
Balanced	704	43	631	1.12	0.63-2.02	0.99	0.57-1.73
Deficit	517	48	469	1.69	0.96-3.01	1.39	0.80-2.43
Household size							
7+	769	54	715	1			
4-6	652	40	612	0.87	0.56-1.35	1.16	0.76-1.77
≤3	150	20	130	2.04	1.14-3.62	2.20	1.24-3.20

[a]Variables mutually adjusted for each other.

Asthma was found to be more prevalent in children aged 5-14 years (7.3%) than in the adults of 15-44 years (5.3%) even after controlling for sex, household size, economic status and schooling. A similar finding was observed in Australia where asthma affects approximately one in five children and one in ten adults.[18]

Children in small households (≤3) were more vulnerable to asthma. The explanation might be that respiratory infections are less likely to occur in these less crowded households as compared to larger households where respiratory infections are more prevalent. It is proposed that certain viral infections early in life may be protective against the development of allergic disease.[19] Declining family size, improvements in household amenities and higher standards of personal cleanliness have reduced the opportunity for cross infection in young families. This may have resulted in more widespread clinical expression of atopic disease.[20] The prevalence of asthma was significantly higher in the less privileged social classes like the 'deficit' and illiterate groups within the population. These findings are in concordance with the studies conducted in New York City where rates of hospitalization because of asthma were generally higher in poor, unemployed and less educated residents.[21,22]

Table-IV

Crude and adjusted odds ratio (OR) and 95% CI for the association of selected risk factors and asthma among Bangladeshi population of 15-4 4 years

Variables	No.	Asthmatic	Non-asthmatic	OR	95%a	Adjusted OR[a]	95% CI
Age (years)							
15-24	1381	53	1328	1			
25-34	946	53	893	1.49	0.99-2.24	1.44	0.93-2.20
35-44	679	52	627	2.08	1.34-3.14	1.88	1.18-3.00
Sex							
Male	1514	74	1440	1			
Female	1492	84	1408	1.16	0.83-1.62	1.30	0.80-2.14
Occupation							
Housewife	938	56	882	1			
Labour	100	8	92	137	0.58-3.09	1.43	0.60-3.46
Agriculture work	205	10	195	0.S1	0.38-1.67	1.03	0.44-2.44
Schooling							
Secondary+	748	35	713	1			
Primary	1055	53	1002	1.08	0.68-1.71	1.01	0.57-1.79
Illiterate	607	38	569	1.36	0.83-2.24	0.93	0.52-1.65
Geographical location							
Metropolitan	1050	52	998	1			
Other urban	1011	65	946	1.32	0.89-1.89	1.29	0.88-1.91
Rural	945	41	904	0.87	0.56-1.35	0.81	0.51-1.65
Economic status							
Surplus	830	42	788	1			
Balanced	1362	63	1299	0.89	0.58-1.35	0.93	0.61-1.40
Deficit	814	53	761	1.31	0.84-2.02	1.34	0.85-2.14
Household size							
7+	1705	95	1610	1			
4-6	1196	63	1299	0.82	0.59-1.15	0.75	0.53-1.06
≤3	105	11	94	1.98	0.97-3.96	1.69	0.86-3.32

[a]Variables mutually adjusted for each other.

Key messages

- The prevalence of asthma in Bangladesh is similar to neighbouring countries but lower than in developed countries.
- Asthma is more common in families with fewer children.
- Asthma is more prevalent in poor and illiterate groups of people.

Interestingly, our study shows that asthma is equally prevalent in metropolitan areas, in other urban areas and in rural areas. Though the city areas are highly polluted compared to rural and other areas, there is no definite basis that macro-environmental factors such as climate and pollution are important determinants of regional variations of asthma severity. It is fashionable to ascribe the recent increase in the prevalence of asthma to atmospheric pollutants, such as nitrogen oxides, which have been implicated in the high prevalence of respiratory symptoms and asthma in western society. Pollution can undoubtedly trigger asthmatic attacks and be detrimental to lung function but the evidence regarding the role of pollutants in the development of asthma is much less convincing.[23-24] These factors are possibly important in causing variations over a short period of time. A German study also supports this view, as no significant difference was shown in the lifetime prevalence of wheeze in two areas differing in pollution levels.[25]

The risk of asthma was greater among active smokers than non-smokers in this study. Cigarette smoking is a powerful risk factor for the development of chronic mucus hypersecretion and progressive airflow obstruction in middle and old age.[26] The 4-year incidence of doctor diagnosed asthma among people aged 10-39 years in Tucson, Arizona, was three times greater among smokers than among non-smokers at the start of the observation period.[27]

Further studies need to be done to look into the details of risk factors and protective elements for the development of asthma in Bangladesh.

Acknowledgements

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International Journal of Epidemiology 2002;31:488-489

Commentary: Does the 'hygiene hypothesis' provide an explanation for the relatively low prevalence of asthma in Bangladesh?

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The prevalence of childhood asthma in Bangladesh is much lower than in developed countries, but similar to those of other countries in this region like Pakistan and India.[1] These differences in asthma prevalence may be attributed to a 'western lifestyle', which among other factors is characterized by a higher level of hygiene, lower rates of infections,

and small family size. Among the Bangladeshi children, those living in small families (three or less people) were more likely to suffer from asthma. The observation of an inverse relation between sibship size and atopy formed the basis of what is known today as the 'hygiene hypothesis'.[2] The immunological extension of this concept is the distinction of Thl and Th2 lymphocyte populations in laboratory animals and the recognition that 'natural immunity' to bacterial and viral infections induce a Thl pattern of cytokine release, potentially suppressing the Th2 immune response involved in IgE mediated allergy. Thus, changes in the level of stimulation from the microbial environment associated with improvements in public health and hygiene may have indirectly influenced the postnatal development of immune functions, so as to increase predisposition to chronic allergic conditions during childhood.[3]

The high rates of respiratory infections, tuberculosis, measles and helminths infections in Bangladeshi children might thus contribute to lower rates of allergy. There is, however, conflicting evidence whether early (viral) infections may enhance or decrease the risk of developing asthma. A recent longitudinal birth cohort study from Germany showed that repeated lower respiratory tract infections early in life were positively associated with subsequent development of asthma, wheeze, and bronchial hyperreactivity. In contrast, early episodes of other infections (particularly viral infections) were inversely related to the development of asthma at age 7.[4] Reverse causation seems a plausible explanation for the positive association between lower respiratory tract infections and subsequent wheeze and asthma, with lower respiratory tract infections being predictors of, rather than risk factors for, asthma.

Epidemiological evidence supporting the 'hygiene hypothesis' can further be found in studies of Italian military cadets. Respir¬atory allergies were less frequent in cadets with antibodies against hepatitis A virus and were inversely related to other orofecal and foodborne infections.[5] These types of infections are likely to play an important role in countries like Bangladesh.

Studies in rural areas of Central Europe have shown that growing up on a farm and more specifically contact to farm animals was associated with a substantial decrease in risk for the development of hay fever and asthma, when children from farming families were compared to their peers living in the same villages.[6,7] Whether increased exposure to microbial compounds has to occur early in life to affect maturation of the immune system, thereby reducing the risk for development of allergic diseases has recently been investigated in a cross-sectional study in Switzerland, Austria and Germany.[8] Exposure of children younger than one year, compared with those aged 1-5 years, to stables and consumption of farm milk was associated with lower frequencies of asthma, hay fever and atopic sensitization. The results of these studies provide further evidence for the hygiene hypothesis and may in part explain the lower rates of asthma and allergy found in rural communities as compared to urban ones.

In Bangladesh, asthma was equally prevalent in metropolitan areas, in other urban areas and in rural areas. Thus, the effect of farming seen in European studies was not observed in Bangladesh. In a recent case-control study on indoor exposures and childhood asthma

in Nepal, keeping cattle inside of the family home was associated with a risk reduction for asthma whereas keeping cattle outside of the home had no protective effect.[9] Thus, it is conceivable that there might be variations in asthma prevalence in Bangladesh associated with keeping cattle indoors. Alternatively, if exposure to infections and unhygienic drinking water is the main source of microbial stimulation of Bangladeshi children, and if these exposures are evenly distributed between metropolitan areas, urban areas and rural communities, no variation in asthma prevalence would be expected.

In conclusion, the hygiene hypothesis may at least in part explain the lower prevalence of asthma observed in Bangladesh as compared to developed countries. However, the prevalence of asthma in Bangladesh is substantial and represents an important public health problem which might increase in parallel with the economical development of the country.

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Original Article *Bangladesh J Child Health 2002; Vol 26 (1/2): 3-8*

Prevalence of Reported Asthma Symptoms in Children of Bangladesh

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Objectives: This study was aimed to define the prevalence of childhood asthma as well as to identify the risk factors for asthma in the children population of Bangladesh.

Methodology: A cross-sectional study was conducted from January 1999 to August 1999 on 5642 Bangladeshi persons of 963 families including 1571 children of 5-14 years. Data were collected from randomly selected primary sampling units of eight municipality blocks of four large metropolitan cities, twelve municipality blocks of six district towns and twelve villages of six districts chosen randomly from all 64 districts of the country. Face to face interviews were performed with the housewives or other guardians at the household level using a structured questionnaire.

Results: The prevalence of asthma (wheeze in the last 12 months) was 7.3% (95% CI 6.1-8.7). The prevalence of other asthma definitions were ever wheeze (lifetime wheeze) 9.0% (95% CI 7.7-10.6), perceived asthma (perception of having asthma in children by the mothers) 8.5% (95% CI 7.2-10.0), doctor diagnosed asthma (diagnosis of asthma by any category of doctor either qualified or unqualified) 4.4% (95% CI 3.5-5.6), night cough (cough at night without chest infection) 6.6% (95% CI 5.5-8.0) and night wake coughing (waking up from bed due to coughing without having chest infection) 6.9% (95%o CI 5.7-8.3). Asthma in children was found to be significantly higher in households with 3 or loss people than in larger household (OR 2.20,95% CI 1.24-3.20). Rural children were found to be more prone to have asthma than urban children (OR 1.76, 95% CI 1.04-2.98). The "deficit" group (poor people) (OR 1.41, 95% CI 1.04-1.92) as well as illiterate groups (OR 1.51, 95% CI 1.01 -2.24) were found more vulnerable to asthma attacks than the "surplus" group and more educated group respectively.

Conclusion: Childhood asthma in Bangladesh appears to be a substantial public health problem. Children of poor, illiterate and rural families are more likely to suffer from asthma.

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Asthma, Atopic Eczema and Allergic Rhino-conjunctivitis in School Children

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Background: International Study of Asthma and Allergies of Childhood (ISAAC) phase one study had already been completed in two age groups in 156 collaborating centers of 56 countries involving a total of 721601 children. Bangladesh did not participate earlier in this worldwide study.

Objective: To determine the prevalence of asthma, allergic rhinitis and eczema in school children of Dhaka district using ISAAC protocol.

Methodology: A school based cross sectional study done in 2000 by using both written questionnaires (WQ) and video questionnaires (VQ). Students of class-VIII (13-14 years) filled up both the WQ and VQ and the parents of class I (6-7 years) filled up only the WQ on behalf of the students. Sixty five (65) primary schools and 39 high schools were randomly selected from all 19 thanas to cover equally both the urban and rural schools of the entire area of Dhaka district.

Results: A total of 6260 written questionnaires were eligible for the analysis (3029 form 6-7 years of class I and 3231 from 13-14 years of class VIII). In addition, the validated international video questionnaires were used for the older age group (3231). The symptoms of atopic diseases in the previous 12 months or ever in all children, both age groups, both sexes and in both urban and rural areas. The life time (ever) and 12-month period (recent) prevalence of three allergic conditions with 95% CI were as follows : wheezing 13.8% (12.9-14.6), 7.6% (6.9-8.2); allergic rhinitis 25.0% (23.9-26.1), 20.0% (19.1-21.1) and eczema 8.7% (CI 8.0-9.4), 6.5% (5.9-7.2). respectively. The prevalence of wheezing and other atopic features in both age groups of 6-7 years and 13-14 years showed higher features of recent wheeze in the younger children than in the older children, recent wheeze 9.1% Vs 6.1%; but the other atopic features were found lower in younger age group, recent rhinitis 16.3% Vs 23.5%, 0.001; conjunctivitis 6.4% Vs 8.3%, 0.001; recent eczema 6.0% Vs 7.1% 0.001. Male children were found to be more suffering from all types allergic conditions than their female peers: recent wheeze 9.0% Vs 5.9%, recent rhinitis 21.9% Vs 17.9%, recent allergic conjunctivitis 8.7% Vs 6.7% and recent eczema 6.8% Vs 6.2%).

Conclusion: Though the prevalence of asthma and atopic eczema was lower than those of developed countries but still appeared to be a major health problem for our children. Allergic rhinitis was the commonest of all atopic problems in children. The younger children (6-7 years) were more likely to suffer from wheeze (asthma) but other allergic problems were more in older group of children (13-14 years). Male children were more prone to all types of allergic problems, whether wheeze or other atopic conditions, than the female peers.

Original Article *J Bangladesh Coll Phys Surg 2005; 23 : 3-8)*

Perception and Practice of Health Care Providers on Asthma Management in the Community of Bangladesh

ARM Luthful Kabir, M M Hoque, A Rahman, M F Ahamed, M A Haq, M Q-K Talukder

Background: More than 7% children (4 million) and 5% adults are suffering from asthma in Bangladesh. The management of asthma has already been formulated globally. We need to know the management of asthma at every level of health care facility of the country.

Objective: The study was done to look into the current perception and practice of Health Care providers (HCP) on asthma management

Methodology: It was a cross sectional survey. Multistage cluster sampling design was followed for the selection of HCPs from all over Bangladesh. A total of 288 HCPs were selected including 120 patients and 69 pharmacists. Data were collected by trained physicians through a structured questionnaire from HCPs with face-to-face interview.

Results: Asthma was considered as a common health problem by all HCPs. All HCPs thought respiratory distress (92.2%-100%) and cough (63.6%- 90%) to be most important features for the diagnosis of asthma. Chest x-ray was the only investigation advised in 49.1%-75% cases to support the diagnosis of asthma. Use of nebuliser was limited to the consultants and Resident Physicians (RPs) (53.5%-86.4%) in acute asthma. Use of rescue course of oral corticosteroids was minimum (14%-45.6%). Antibiotics use was found in 77.7%-100% cases. Oral salbutamol, aminophylline and kitotifen were found very common for asthma management. Use of inhalers by the patients was found low and limited only to salbutamol and beclomethasone. The aspect of asthma education was confined only to advising 'avoiding triggering factors'. HCPs suggested for organization of asthma/ respiratory centers in different health facilities and their training on asthma management.

Conclusion: Though asthma is considered a common health problem, the modern management of asthma is not widely practiced by the physicians of Bangladesh. Use of inhalers is very low and limited to sulbutamol and beclomethasone. Antibiotics are used in 70-100% cases. Asthma education is confied only to advising 'avoiding trigger factors'.

Original Article *Bangladesh J Child Health 2005; Vol 29 (1): 6-11*

Higher Prevalence of Childhood Asthma in Coastal Areas than in the Capital City of Bangladesh

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Background: Bangladesh National Asthma Prevalence Study (NAPS) - 1999 states that 4 million children are suffering from asthma and the prevalence is more in rural areas than metropolitan areas of Bangladesh.

Objectives: To determine the prevalence of childhood asthma and to identify its triggering factors in 2 contrasting settings viz. apparently highly polluted capital Dhaka city and least polluted coastal areas of Bangladesh.

Methods: It was a cross sectional prevalence study, conducted from January to April 2001, using multistage stratified random sampling design. Face to face interviews were taken at the household level through a pre-tested questionnaire. Total population studied was 6116, of which children population was 1730. This paper deals with the data on children population.

Results: The overall prevalence of asthma (recent wheeze) was 8.9% (95% CI 7.6-10.4). The prevalence of asthma was significantly higher in coastal area (11.5%, 95% CI 9.7-13.6) than in Dhaka (4.9%, 95% CI 3.4-6.9). Frequency of all other definitions asthma was also significantly higher in coastal areas than in Dhaka city. It was observed that common cold, cold food/drink, extreme hot and cold weather, dust, gas/kerosene stove fume and motor vehicle fume were important triggering factors for asthmatics of both Dhaka and coastal areas. The use of wood stove and the first and full moon were significant triggering factors only in coastal areas.

Conclusion: Coastal areas had a significantly higher prevalence of all definitions of childhood asthma over the capital Dhaka city. The use of wood stove and the first and full moon were significant triggering factors only in coastal areas.

Review Article *Bangladesh J Child Health 2005; Vol 29 (2): 66-72*

Paediatric Pulmonary Function Tests (PFT) - A Review

Md. Al-amin Mridha , **ARM Luthful Kabir,** Md. Ruhul Amin

There are many facets of Pulmonary Function Tests (PFT) like control of breathing (breathlessness,"sleep disordered breathing), responsiveness of the airways (bronchial responsiveness, cough sensitivity), mechanical properties of the intra-thoracic airways (forced expiration, resistance), mechanical properties of the air spaces (compliance, lung volume), gas exchange/ gas transfer (arterial gases, ventilation-perfusion matching) and functional properties of the diaphragm and chest wall (respiratory muscles) . However, it is the measurements of lung mechanics and gas exchange which are more generally considered to constitute "lung function". Various types of lung functions are utilised clinically and epidemiologically to measure functional status of lungs in order to assess the pulmonary diseases . It also provides the objective criteria in diagnosis and management of commonest chronic disease, asthma . PFT in a child differs from that in adult largely because of the volume change that occurs from birth through the period of growth to the adulthood. These differences influence technique, methodology and interpretation

The applications of lung function tests are as follows:

- Diagnosis: single observations are rarely diagnostic, but occasionally confirmatory (e.g. diagnosis of hypoplastic lung in infancy with persistent tachypnea) or even startling (e.g. vocal cord dysfunction in a case previously diagnosed as asthma).
- Measuring morbidity: as guide to management baseline value for comparison, disease progression as in asthma and cystic fibrosis (CF).
- Assessing response to therapy: very short term (e.g. bronchodilator therapy), acute therapy (e.g. severe asthma, bronchiolitis), long term (monitoring asthma and CF).
- Teaching health professional.
- Research: developmental physiology, mechanisms of disease, epidemiology and therapeutic trials.

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Prevalence of Asthma in highly Polluted Dhaka City and low Polluted Coastal area of Bangladesh

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Background: Bangladesh National Asthma Prevalence Study (1999) states that 7 million people including 4 million children are suffering from asthma and prevalence is more In rural area than metropolitan area of Bangladesh.

Objective: The present study compares the prevalence of asthma and its trigger factors in 2 contrasting settings viz. highly polluted Dhaka city and least polluted coastal area of Bangladesh.

Methodology: It was a cross sectional study; conducted from January to April 2001, using multistage stratified random sampling design, face lo face Interviews were taken at the household level through a pre tested questionnaire in a total Population of 6161 (M: F - 109.7:100; Dhaka 3087 and coastal area 3029).

Results: The prevalence of asthma (recent wheeze) was 6.8% (95% CI 6.2-7.5). Frequency of all categories of asthma was significantly higher in coastal area than Dhaka city. The common cold, extreme weather, ingestion of cold food/drink, allergenic food, dust, gas/kerosene stove and motor vehicle fumes, were possible trigger factors of asthma for residents of both Dhaka city and coastal area. The history of bronchiolitis and exposure to wood stove fumes in infancy were found associated with asthma in both the settings but more in coastal area. The first and full moon seem to be important trigger factor (history) for asthma in coastal area.

Conclusion: In conclusion, asthma is more prevalent in coastal area with low outdoor pollution.

Original Article *Bangladesh J Child Health 2005; Vol 29 (3): 93-98*

Spirometric Standards for Healthy Children Aged 6-15 Years in a School of Dhaka City, Bangladesh

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Background: Prevalence of Asthma in children is about 7% in Bangladesh but Spirometric value of children is not available.

Objective: The study was conducted to find out the spirometric value of normal school going children and to compare the values with those of other countries.

Methodology: Sprirometric evaluation of normal school going children was done by computerized spirometer (Ponygraphic of COSMED srl-ltaly) in a school of Dhaka city during the period of February 2002 to July 2002. Nine hundred twenty seven healthy children aged 6-15 years were selected for the study. Outcome variable were the forced vital capacity (FVC), forced expiratory volume in first second (FEV1), peak expiratory flow (PEF), the ratio of FEV1 to FVC and forced expiratory flow (FEF) between 25% & 75% of vital capacity (FEF 25% & 75%). The pulmonary function data was separated by sex and categorized on the basis of height, weight, age and body surface area. The mean and standard deviation were calculated for every such variable. The results (FVC) of present study was compared with those of other countries (India, Nigeria, British and America).

Results: The lung function variables showed a linear positive correlation with height, weight, age and body surface area (independent variables). Strong correlation was found between lung function values and independent variables. Height showed the maximum correlation in comparison with other variable. Forced vital capacity (FVC) and FEV1 showed a spurt after the height of 150 cm. Regression equations for lung function values were determined for boys and girls considering height as independent variable. Boys showed higher values for lung functions than those of girls. Lung function values of these studied children are nearly similar to Indian children and significantly lower than Nigerian, British (UK) and American (USA) peers.

Conclusion: Spirometric values of our children are very much comparable with those of regional children (India) but values are lower than those of African (Nigeria), European (British) and American (USA) children.

Original Article (Indexed) *Indian J Chest Dis Allied Sci 2009;51:153-158*

Risk Factors of Bronchial Asthma in Two Contrasting Settings– Metropolitan and Coastal Areas of Bangladesh: A Case Control Study

MR Hassan, **ARM Luthful Kabir,** F. Rahman, MA Hossain, A.M. Mahmud, KS Bennoor, M.R. Amin

Background: Seven million people are suffering from bronchial asthma in Bangladesh. But scanty data is available to explain the risk factors for asthma in Bangladesh.

Methods: This population-based, age, sex, and economic status matched case-control study was conducted to identify the risk factors responsible for the development of bronchial asthma in two contrasting settings, the metropolitan capital city and coastal area of Bangladesh. A structured pre-tested questionnaire was filled up by face-to-face interviews with the patients or parents of patients with bronchial asthma and the normal controls after a respiratory physician confirmed the diagnosis on the basis of history, physical examination and spirometry.

Results: Presence of allergic problems was recognised as risk factors for the development of bronchial asthma. Concomitant existence of atopic diseases, like allergic rhinitis, eczema and allergic conjunctivitis were found to be significant risk factors in both the settings. History of early childhood lung infections, like pneumonia, bronchiolitis and intake of antibiotics and paracetamol in last 12 months were also observed to be the risk factors in both the areas. Though most of the so-called allergic foods were statistically found to be a protective factor in both the settings [odds ratio (OR) 0.48, 95% confidence intervals (CI) 0.37-0.63 in city area and OR 0.80, 95% CI 0.66-0.96 in coastal area], this was considered to be an artifact.

Conclusion: Several common risk factors for the development of bronchial asthma were identified in both city and coastal areas of Bangladesh. History of early childhood lung infections, like pneumonia, bronchiolitis and intake of antibiotics and paracetamol in last 12 months were also observed to be the risk factors in both the areas.

Risk of Recurrent Wheeze In Children of 24 Months of Age

Delwar Hossain, **ARM Luthful Kabir**

Purpose: There are lot of risk factors for recurrent wheeze in young children.

Objective: One hundred young children with recurrent wheeze were studied for the possible risk factors, and were compared with one hundred children without recurrent wheeze.

Methodology: It was a case-control study. The children who attended the OPD of the Institute of Child and Mother Health with 3 or more attacks of wheeze in life were studied through a structured pretested questionnaire. The questionnaires were filled up through a face to face interview with mothers.

Results: The mean age of children with recurrent wheeze was 11.3 months and that for the controls was 13.8 months. The median age of the first attack of wheeze was 3 months and 31% required hospitalization signifying severe attack. There were past history of pneumonia in 31% cases and bronchiolitis in 15% cases. Male children were found to suffer more recurrent wheeze than female peers (OR 2.37, 95% CI 1.32-4.26). The chance of recurrent wheeze in children was double if parents were poor (OR 1.91, 95% CI 1.05-3.48). The children were more likely to suffer from recurrent wheeze if they had atopic conditions; 4 tines in case of atopic dermatitis (OR 4.25, 95% CI 1.25-15.77), more than 3 times (OR 3.59, 95% CI 1.04-13.59) in case of allergic conjunctivitis and 4 times (OR 4.25, 1.72-10.87) in case of allergic rhinitis. We did not find any significant relationship with breast feeding, time of birth, birth weight, nutritional status, number of family members staying in one room, rented house, maternal asthma, wood stove and environmental tobacco smoke.

Conclusion: Male child, poor parents and allergic conditions of atopic dermatitis, allergic rhinitis and allergic conjunctivitis are risk factors for recurrent wheeze in young children of 2 years of age.

Original Article *Bangladesh J Child Health 2017; 1(1): 9-14*

Risk Factors of Recurrent Wheeze in Infancy

Samiha Amin, **ARM Luthful Kabir**

Background: Recurrent wheeze in infancy is a common clinical problem and one of the most important causes of health facility visits in Bangladesh. Recurrent wheeze is an important manifestation of bronchiolitis, pneumonia and asthma.

Objectives: The study was conducted to identify the risk factors associated with recurrent wheeze in infancy.

Methods: This case control study was conducted at Dhaka Shishu Hospital and Dhaka Medical College Hospital (DMCH) during August 2008- June 2009 including 50 infants (1-12 months of age) with recurrent (3 or more) wheeze or wheeze persisting for more than one month during first year of life as study group and 50 children (12 months to 24 months of age) who had no wheeze during first year of life as control group.

Results: The study group comprised of 34 (68.0%) male and 16(32.0%) female infants and control group included 31(62.0%) male and 19 (38.0 %) female children. The mean age of study group was 9 months and that of the control group was 18 months. The median age of first attack of wheeze was 4 months. Twenty one (42.0%) infants in study group and 29 (58.0%) in control group were exclusively breastfed. On the other hand, 29 (58.0%) studied cases and 21(42.0%) controls were mixed fed (formula, cow's milk, suji along with breast milk).The study children who were exclusively breastfed had lesser incidence of recurrent wheeze than those who were mixed fed but the difference was not significant (P> 0.05). There was past history of bronchiolitis in 45 (90.0%) cases of study group in comparison to only 3 (6.0%) cases of control group (p <0.05). Past history of pneumonia was present in 15 (30.0%) cases of study group compared to only 3 (6.0%) cases of control group (P <0.05). There was history of mother's asthma among 14 (28.0%) infants of study group versus only 1 (2.0%) mother of control group (P <0.05). There was history of father's asthma in 8 (16.0%) cases of study group in comparison to none of control group (P<0.05). In this study we observed that 11 (22.0%) infants of study group had sibs suffering from wheeze compared to only 3 (6.0%) children of control group (<0.05). Sixteen (32.0%) infants of study group versus only 6 (12.0%) children of control group had atopic dermatitis and 33 (66.0%) cases of study group had suffered from allergic rhinitis whereas only 10 (20.0%) children had allergic rhinitis in control group (P<0.05). Atopic dermatitis and allergic rhinitis among study children were significantly associated with recurrent wheeze during infancy. Twenty (40.0%) study cases had exposure to tobacco smoke compared to 22 (44.0%) cases of control group. Exposure to tobacco smoke was not found to be associated with recurrent wheeze (P >0.05)

Conclusion: The risk factors of recurrent wheeze in infancy identified in this study were past history of bronchiolitis , past history of pneumonia, asthma in parents (father and mother), wheeze in other sibs and atopic condition in children (atopic dermatitis, allergic rhinitis). Exclusively breastfed children had lesser incidence of recurrent wheeze than those who were mixed fed but the difference was not significant and exposure to tobacco smoke was not associated with recurrent wheeze in infancy in the present study.

What Our Rural Mothers Think About Asthma?

ARM Luthful Kabir

BPA Conference
29-30 Dec. 1996, Sylhet

Objective and Methodology: One hundred rural mothers were interviewed at the OPD of Jalkuri branch of ICMH to see their knowledge about asthma.

Results: About half of the mothers (48%) were illiterate and only 7% mothers had education of more than 10 years of schooling. All the mothers (100%) knew about asthma. Family H/O asthma was found in 34% cases with 10% in the children age group. Seventy three percent mothers had the knowledge that asthma affects all ages. Most of the mother (72%) had no idea about what type of disease asthma is and 40% mothers thought that cold causes asthma and 58% had no idea about the etiology. Most of the mothers were conversant about the symptomatology of asthma as respiratory distress (91%) and cough (60%).

Eighty one percent mothers were optimistic about the availability of treatment with 73% in modem medicine and 26% homeopathy though 81% mothers did never hear about inhalation medication. Mothers were found to be divided on the prognosis as 38% believed that asthma is "curable', 30% "never cures' and 25% appeared confused.

Conclusion: It may be concluded that though rural mothers are well conversant about the asthma and its symptomatology but they have no clear idea about its "etiology', management and prognosis.

Diagnosis of Asthma In Children

Chowdhury Ali Kawser, **ARM Luthful Kabir**

2nd workshop on Asthma and COPD
5-7 November, 1997, BCPS, Mohakhali, Dhaka

Introduction: Asthma is by far the commonest chronic disease of childhood. In developed countries it affects 11-20% of all school age children. Not only in childhood asthma very common but it seems that it is becoming even commoner in children. The incidence and new cases of asthma in children is about 2-5 times that in young adults. It is clearly a major problem because the patients are not bread-winners, the importance of the disease is minimised. The diagnosis of asthma is frequently missed. Only small proportion of wheezing children had been diagnosed as having asthma and some two - third never been treated with bronchodilators. The diagnosis of asthma depends on:

1. Clinical history
2. Physical examination
3. Investigations

Barriers In The Management of Asthma In The Community

ARM Luthful Kabir, Monimul Hoque, Aminur Rahman, MQ-K Talukder

6th Workshop Asthma and Chest Diseae
7-9 May 2002, BCPS, Mohakhali, Dhaka

Background: More than 7% children (4 million) and 5% adults are suffering from asthma in Bangladesh. The management of asthma has already been formulated globally. We need to know the management of asthma at every level of health care facility of the community.

Objectives: To look into the current practice and barriers in the management of asthma in the community and also the experiences of asthma patients as regards asthma management

Methodology: Data were collected through a validated structured questionnaire from health care providers (288) at all levels starting from village, union, upazilla, district, medical college, and specialised institutions selecting through a multistage cluster sampling design from all over the country. Data were also collected from asthma patients (120) from the aforesaid areas .

Results: Diagnostic features of asthma are not well recognized by the HCPs and investigation facilities are very minimum. Oral asthma medications are more prescribed than inhalation therapy. The use of preventers is mostly limited to beclomethasone group and all HCP are uniformly confused about the duration of therapy. Antibiotics are being prescribed by all categories of HCP. The HCPs think that the inhalation medications are costly. On inquiry, the asthma patients have been found to using mostly oral medication, occasional reliever inhaler but very minimum prophylactic inhaler. They demand for the invention of curative asthma medications.

Conclusion: The modern management of asthma is not widely practised in the community.

Role of different risk factors in development of asthma in the coastal Population of Bangladesh

M Rashidul Hassan, AKM Fazlur Rahman, **ARM Luthful Kabir,** Asif M Mahmud, M. Humayoun Kabir, Kazi S Bennoor, M Ali Hossain1 M Ruhul Amin, M Mostafizur Rahman, G M Monsur Habib

7th Workshop on Asthma and COPD
6-7 May 2003, NIDCH, Mohakhali, Dhaka

Background: Recently, A comparative study on asthma prevalence in areas with high & low pollution in Bangladesh demonstrated that all categories of asthma were significantly higher in the coastal areas. However role of risk factors for asthma in coastal areas remained to be explored.

Aim: To elucidate role of different risk factors of asthma in coastal area.

Methods: From a population based study, carried out in coastal area of Bangladesh, 1005 asthmatic subjects and 1005 age, sex and economic status matched non-asthmatic subjects were interviewed by trained physicians. History, Physical examination and Spirometry were done in all cases for diagnosis of asthma. One structured pretested questionnaire was filled up by face-to-face interview with the patients or parents to collect information on various risk factors from asthma patients and same questionnaire was used in case of non-asthmatic control.

Results: Intake of food of any kind did not appear as risk factor for asthma among Bangladeshi population living in coastal areas. Affliction by lung infection in early life has been identified as risk factor for developing asthma in later life. (Bronchiolitis: OR 5.07; 95%CI 3.95-6.52, Pneumonia: OR 3.69; 95% CI 2.89-4.70). There is 33% higher chance of developing asthma among persons who took antibiotics in previous 12 months than persons who did not take antibiotics (OR 1.33 95% CI 1.17-1.48). Persons suffering from other allergic diseases are 4 times more susceptible to higher chance of suffering from asthma than persons not suffered from allergic diseases. Breastfeeding has been identified as a protective factor for asthma.

Discussion: The risk factors identified in this study is not representative of all Bangladeshi population, since the study has been conducted among population of coastal area. However, environmental pollution, the main difference among study population and other population of the country, has not appeared as risk factor for developing asthma in previous study.

Conclusion: Lung infection (bronchiolitis and pneumonia) in early life has been identified as a risk factor for asthma in Bangladesh. Allergic diseases also play a significant role. Breastfeeding has been identified as a protective factor for asthma.

Economic Schedule in Management of Asthma for Underprivileged People of Bangladesh

M. Rashidul Hassan, M. Ali Hossain, Asif M. Mahmud, **ARM Lutliful Kabir**, M. Ruhul Amin, Kazi S. Bennoor, M. Mostafizur Rahman

XIII World Asthma Congress
5-8 July, 2003 St. Peterberg, Russia

Background: Out of 7 million asthma patients of Bangladesh about 5.5 million people are underprivileged and 0.7 million asthmatics are so poor that they are unable to buy plain salbutamol tablet to control their symptoms.

Objectives: To control asthma symptoms with minimum expenditure.

Methods: National Asthma guidelines have proposed economic schedules for this large group of poor people who are unable to buy inhalers and sustained release tablets. It is based on retrospective analysis of Asthma guide book of patients over a period of two year in 1996- 1998 over 105 adult patients with available cheaper drugs.

Results: Out of 105, 65 were getting economic schedule and 40 cases were getting treatment as per need. The mean no. of unscheduled visits case vs. control) 3.29 v 7.63 (ratio = 1: 2.3), days off work 12.9 v 19.4 (1:1.5), courses of Prednisolone 2.25 vs. 5.45 (1:2.4), no. of hospitalization 0.3 vs. 0.9 (1:3).

STEP	(ECONOMIC SCHEDULE) Treatment to be given		
IV	Oral steroid (Prednisolone) Single morning dose (5-20 mg)	PLUS all medications of Step III	PLUS Step I
III	Oral plain Aminophyllin/Theophyllin 2-3 times daily PLUS Long acting Salbutamol 2-8 mg 2 times daily Ketotifen may be added if patient has associated rhinitis		PLUS Step 1
II	Oral plain Aminophyllin/Theophyllin 2-3 times daily (Dose: for adults, 100-200 mg/dose; for children, 8 mg/kg body weight/dose) Ketotifen may be added if patient has associated rhinitis		PLUS Step I
I	Short acting β_2 agonist tablet/syrup (Salbutamol; for adults, 2-4 mg; for children, 0.15 mg / kg body weight / dose) as required (that is, when patient feels even mild cough, wheeze and chest tightness, he should take oral Salbutamol, up to 4 times/day).		

Conclusion: Asthma control relatively better in economic schedule than as per need treatment. In developing countries, majority of patients belong to underprivileged group.

Scoring System-A Guide For General Practitioners Enabling Proper Selection of Drugs In Step Care Management of Asthma

M. Rashidul Hassan, M. AH Hossain, AsifM. Mahmud, **ARM Luthful Kabir,** M. Ruhul Amin, Kazi S. Bennoor, M. Mo-stafizur Rahman

XIII World Asthma Congress
5-8 July 2003, St., Petersburg, Russia

Background: Out of 7 million asthma patient of Bangladesh, maximum 0.1 million patients are getting treatment from asthma experts. Rest 6.9 million patients are getting their treatment from general practitioners (GPs). GPs are very much reluctant to use step care plan.

Aim: To make step care management easier for GPs.

Methods: National Asthma guidelines of Bangladesh have encouraged GPs to use scoring

Criteria	Score	Yes	No
1.	Do you have dyspnoea everyday?	1	0
2.	Do you have nocturnal attack of dyspnoea more than two times per month?	1	0
3.	Have you suffered from dyspnoea, which were severe enough to necessitate- Steroid tablets, Nebulizer therapy, and Aminophylline Injection or Hospital admission?	1	0
4.	Do you have persistent dyspnoea for last six months or more OR are you taking steroid tablets for one year or more?	3	0
5.	Is patient's baseline (during asymptomatic stage) PEFR <60 % of predicted value? (Not applicable for <5 yrs.)	1	0
	Total Score = 0-7	7	0

Key: Score 1 = step I, Score 2 = step II, Score 3-4 = step IV, Score 5-7 = step V

System for correct selection of drug for asthma. Effectiveness of these criteria were assessed practically in 5 asthma workshop, where total 100 GPs applied these criteria on 200 different patients.

Results: More than 90% GPs applied scoring successfully.

Conclusion: It increases ability to use preventer drugs more and reduce dependence on oral drugs. It as an effective tool for asthma management particularly for GPs.

Respiratory Care Services at the Institute of Child and Mother Health (ICMH), Dhaka

ARM Luthful Kabir

1st National Conference BPPF
December 17, 2003, Hotel Sheraton, Dhaka

Institute of Child and Mother Health was established at Matuail, Dhaka in 1998. The OPD service was started in February 1999 and the first ever asthma center at the Govt Hospital level was started in this Institute in February 2000. The centre provides the following functions:

Documentation of asthma cases: The centre documents each asthma case and a structured questionnaire is filled up for the child. This questionnaire is aimed at to find out the true asthma cases, age of onset, number and severity of attack, associated other atopic conditions like allergic rhinitis, allergic conjunctivitis or atopic dermatitis, family history of allergic problems and also parents idea about the disease, medications received and prognosis. So far, the details of more than 500 asthma patient have been documented in the Child Asthma Centre, 3679 patients have been nebulised for their respiratory distress.

Lung function tests: Lung function tests like computerised spirometry and estimation of peak flow are done here at a low cost. So far, we have done more than 200 spirometry on children coming with various chronic obstructive and restrictive lung problems.

Providing asthma education: There is one Asthma Educator who provides salbutamol/ ipratropium nebuliser therapy to asthma patients, educate the parents and children whenever possible about the use of inhalers, spacers and how to take care of spacers. She also does spirometry and measures peak expiratory flow rate of asthma cases whenever advised.

Fiberoptic bronchoscopy: There is also facility for fiberoptic bronchoscopy of children, only place in Bangladesh. The children, who present with various chronic respiratory problems like bronchiectesis, atelectesis, unresolving consolidation, suspected pulmonary TB and laryngomalacia. The centre is equipped with central oxygen supply and suction facilities. We use Pediatric Fiberoptic bronchoscope of Pentax company. There are two Endoscopy Assistants to help conducting bronchoscopy. They are involved in the patient preparation, setting the bronchoscope on and taking care of the bronchoscope after the procedure is over. One hundred twelve cases underwent bronchoscopy in this centre. The bronchoscopy service has been supported by the Laboratory Medicine department. The collected broncho-alveolar lavage (BAL) on fiberoptic bronchoscopy is examined in the Laboratory Medicine department for cell count, gram stain, culture and sensitivity and acid fast bacillus. There are about 50 inpatient beds for management of hospitalized cases. Very recently, five beds have been earmarked exclusively for respiratory care services. Respiratory cases are seen by the Pediatric Pulmonologist. Difficult cases like unresolving consolidation, persistent pneumonia, bronchiectesis, atelectesis, persistent wheeze,

empyema thoracis etc. are admitted into these beds for comprehensive care. Each respiratory case is documented in a separate questionnaire on the ward. Bronchiolitis, pneumonia, bronchiectesis, empyema thoracis, laryngomalacia are documented in different questionnaires.

Chest physiotherapy: The centre has one physiotherapist who is also skilled in chest physiotherapy to provide services to both respiratory OPD and inpatients.

Research activities: Conducting research in the field of pediatric respiratory medicine in collaboration with various hospitals like Dhaka Shishu Hospital, Dhaka Medical College Hospital, Sir Sallimula Medical College Hosptal and organistions like Asthma Association of Bangladesh. So far, 16 publications have ben made out of these research activities in the national and international journals.

Prevalence of Asthma And Other Atopic Conditions In The Garo Children of Bangladesh

Mirza Manjurul Haque, **ARM Luthful Kabir**

8th Workshop on Asthma and Chest Disease
3-4 May 2004, NIDCH, Dhaka

Purpose: Prevalence of asthma and other conditions have been studied in the general children population of Bangladesh. The previous study did not include the tribal population.

Objectives: The study was conducted to study the prevalence of asthma and other atopic conditions in the Garo children community of Haluaghat area of Mymensingh.

Methodology: International Study of Asthma and Allergies of Childhood (ISAAC) protocol was used for this study. The students of class eight of different schools were selected for this purpose.

Results: Total children were 1524 of which Bangalee children were 1077 (70.7%) and Garo children 447 (29.3%). There were 573 (37.6%) male and 951 (62.4%) female children. The overall prevalence of asthma (recent wheeze) was 4.8%, allergic rhinits 34.6% and eczema 40.6%. The prevalence of asthma in Bangalee and Garo children were 4.9%, Vs 4.5%; allergic rhinitis 36.0% Vs 31.1%; and atopic dermatitis 43.0% Vs 34.7%.

Conclusion: Prevalence of asthma is lower in the tribal population of Garo children but the other atopic conditions were higher in comparison to the other Bangladeshi children. The prevalence of atopic dermatitis is highest among Garo children.

In Depth Investigation of Risk Factors of Asthma in a Developing Country

MR Hassan, AF Rahman, **ARM Luthful Kabir**, MA Hossain, AM Mahmood, KS Bennoor

100th American Thoracic Society Conference
20-25 May, 2005, Sandiago, USA

Background: Little data is available to explain the risk factors for asthma in a developing country.

Objective: To identify the risk factors responsible for the development of asthma in the metropolitan city and coastal areas of Bangladesh

Methods: A population-based age, sex, and economic status matched case control study was carried out in coastal areas and in a metropolitan city (Dhaka, the capital of Bangladesh), from January 2003 to April 2004. Structured pre-tested questionnaires were filled up by face-to-face interviews with the patients or parents of the asthmatics and the control by trained physician

Results: Important risk factors for the development of asthma are shown in Table 1

Category	Innercity (Case—655, Control = 655)		Costal area (Case = 1005, Control=1005)	
	OR	95%C1	OR	95% CI
Bronchiolitis	11.76	7.35-18.81	5.07	3.95-6.52
Chilldhood Pneumonia	4.63	3.01-7.12	3.69	2.89-4.70
Allergic Rhinitis	14.28	10.92-18.68	4.69	3.76-5.84
Allergic Conjunctivitis	8.85	6.53-11.99	3.77	1.79-7.92
Allergic disease in family	2.83	2.36-3.55	1.81	1.48-2.19

Risk factors identified for asthma in Metropolitan and Costal area

Food intake, smoking, the presence of carpets or pets, and exposure to pollen or vehicle exhust did not appear as a risk factor for the development of asthma. Allergic diseases were more prevalent within the asthmatic population in the metropolitan city (79% vs 25% RR 2.5 95% CI: 2.2 to 3.0, P< 0.001). However, history of bronchiolitis and childhood pneumonia within the asthmatic population was significantly higher in costal areas (pneumonia 36% vs 17% RR 1.4 95% CI: 1.3 to 1.5, P < 0.001 and bronchiolitis 43% vs 26% RR 1.3 95% CI: 1.2 to 1.4, P<0.001)

Conclusions: Lung infections in early life and allergies have been identified as the leading risk factors for the development of asthma in Bangladesh.

Interactive Discussion - II

Early Care Stops the Flare: Prevention & Management of Various Problems of Pediatric Respiratory Illnesses

1st National Conference - Pulmocon
15 February 2007, BCFCC, Dhaka

Case -1

Dr. Kh Rokanuddin

A 3y 8m old child presented with "Recurrent respiratory distress since 4 mo of age". Hospitalized for more than 20 times for the illness. First attack of bronchiolitis at 4 mo of age followed by recurrent attacks of respiratory distress. Problems were more at night and mostly during sleep time. Mother had great concern for the sleep of her child. The child used to make noise and sweat and frequently wake up from sleep. He had day time somnolence. He was born term with appropriate birth weight and developing normally. The management of the child will be discussed. **Dx. Tonsillo-adenitis with OSAS syndrome.**

Case-2

Dr. Sakil Ahmed

A 20-month old male child presented with " Cough and respiratory distress for 1 mo. He had no fever. The child's condition improved apparently over next few days but he continued to have recurrent cough and respiratory distress. Mother told that he child had 'pneumonia' at the age of 3 months and improved later on. On examination, he had no tachypnea but had diminished breath sound on the right side. TWBC was within normal limit. The diagnosis and management of the case will be shared. **Dx. Primary pulmonary TB.**

Case-3

Prof. ARM Luthful Kabir

A 7-year old child presented with "Cough for 23 days and " H/O fever for 7 days 23 days back. There was no family history of asthma, tuberculosis or any history of choking and coughing during taking food. Temperature subsided but cough continued. CXR showed massive atelectesis of right lung. The management of the case will be discussed. **Dx. Massive atelectesis of right lung following pneumonia.**

Case-4

Prof. Abid Hossain Mollah

A 9-year old male child presented with

" Productive and foul smelling sputum since 4 years of age. The cough used to occur more at night. He suffered from 'pneumonia' at 4 mo of age and then he had recurrent attacks of 'pneumonia' every 2-3 months till 4 years of age when he started producing productive sputum. He also had occasional fever, recurrent loose stool, ear infection and runny nose. He did not have difficult breathing during this time. He has been treated with asthma medications (beclomethasone and montelucast) and chest physiotherapy for the last 3 years and his symptomatology abated to a great extent.

He was born term with ABW at home normally with uneventful perinatal period. His parents are not consanguineous. His elder sister died of bilateral bronchiectasis at the age of 10 years. His younger sib is well. His father is a smoker. **Dx. Cystic fibrosis.**

Evaluation of Infantile Wheeze: A Study of 25 Cases

Rubaiya Noushin, Sudipta Roy, Rahat Bin Habib, **ARM Luthful Kabir**

5th Child Pulmocon, BPPF
1-2 December, 2017, BSMMU, Dhaka

Background: Infantile wheeze (recurrent wheeze in infants) is a common clinical problem in infants and is usually associated with viral illnesses. It is a major source of morbidity and responsible for a high consumption of healthcare and economic resources worldwide. Correct identification and effective treatment of these cases may reduce frequency of hospitalization and economic burden on the part of their parents. Appropriate treatment depends on identification of the underlying etiology. Common causes of infantile wheeze being post bronchiolitis wheeze, gastro esophageal reflux disease, iron deficiency anemia, congenital heart disease, Immunodeficiency and cystic fibrosis .

Objectives: The study was conducted to identify the etiology of infantile wheeze.

Methods: This cross sectional study was conducted at Ad-din Medical college Hospital during October 2017 to November 2017. A total of 25 hospitalized cases (1- 24 months of age) with recurrent (3 or more) wheeze or wheeze persisting for more than one month during first year of life were selected. Detailed history was taken and thorough physical examination was conducted. Relevant investigations of CBC with PBF, CRP, CXR, iron profile, primary immunodeficiency panel (IgG, IgA, IgM, IgE) with lymphocyte subset analysis, contrast x-ray of esophagus with T position, MT, Gene Xpert, ABF/ RIF resistance, echocardiography, sweat chloride analysis were done on the basis of whenever indicated

Results: The study group comprised of 19 (76.0%) male and 6 (24.0%) female infants with M: F =3.1:1. The mean age of children was 11 months and the median age of first attack of wheeze was 2 months. There was past history of bronchiolitis in 24(96.0%) cases and pneumonia in 8(32.0%) cases. Eleven (44%) were exclusively breast fed up to 6 months and 16 (64%) were given formula or cow's milk. There were family history of asthma, allergic rhinitis and atopic dermatitis in 11(44.0%), 13(52%), 11(44%) cases respectively. Parents of 5 (20%) children were consanguineous and 12 (48%) children had exposure to tobacco smoke. Six (24%) cases had history of vomiting during or immediately after feeding. All 25 cases had bilateral wheeze with crackles in 11(44%) cases and 9 (36%) had failure to thrive. Low Hb% (<11gm/dl) in 16 (64%) cases and iron deficiency anemia was diagnosed in 12 (48%) cases. Raised IgE was found in 11(52%) cases indicating airway hyper responsiveness. Thirteen (52%) children had reduced immunoglobulin level, among them selective IgA deficiency in 5(23.8%), combined (IgG and IgA) deficiency in 5(23.8%), panhypogammaglobulinemia in 2(9.5%), IgG deficiency in 1(4.7%) case. Gastro esophageal reflux disease (GERD) was diagnosed in 9(45%), and cystic fibrosis in 1(4%) patient. No definitive cause was found in 4(16%) cases, diagnosed as post bronchiolitic wheeze.

Conclusion: Infantile wheeze has a diverse etiology, the most common being primary immunodeficiency of various combinations (52%), followed by GERD (45%) and post bronchiolitis recurrent wheeze (16%). The prevalence of iron deficiency anemia was found very high in the infantile wheeze group of children.

Infantile wheeze and iron deficiency anemia: a (IDA): A Case Control Study

ARM Luthful Kabir, Abdul Hannan, Md. Ruhul Amin, Soofia Khatoon, Shah Md. Zahurul Haque Asna, Shafiqul Haque Chowdhury, Jasim Uddin Majumder

September, 2008
ICMH, Mauail, Dhaka

Introduction: There are recurrent attacks of wheeze in infants in the first year of life. We are ignorant about the possible risk factors for such infantile wheeze. Along with other factors, iron deficiency anemia might be associated with the infantile wheeze.

Objective: A case control study was done with infants having infantile wheeze (having three or more attacks of wheeze or wheeze persisting for more than one month, in the first year of life) (the cases) and infants nearing 12 months having less than three attacks of wheeze (the controls) to look into the possible risk factors Including iron deficiency status.

Methodology: A face to face interview with the mothers was conducted to study the risk factors like LBW, preterm delivery, feeding practices, other atopic conditions, family history of atopy, smoking in the family etc. and investigated for evidence of iron deficiency anemia (IDA) by estimation of Hb%, MCV, MCH, MCHC, serum iron, ferritin and TIBC. There were 60 cases of infantile wheeze and 64 cases of controls.

Results: The mean age of the infantile wheeze cases was 8.49 months and that of controls 10.16 months. There was more cases of male in both cases and controls (83% and 67%). Most babies were born term in both the groups (85% ana 94% respectively) and born with ABW as well (82% and 84% respectively). There was history of bronchiolitis in 85% of cases in the infantile wheeze group as against none in the control group. Radiological features showed hyperinflation (35%), streaky densities (25%) and increased translucency (23%) in the infantile wheeze cases. Exclusive breast feeding and predominant breast feeding were less in comparison to the controls (41% and 17% Vs 60% and 29%). Infantile Wheeze was found more, in cases of children having less number of sibs (infantile wheeze group having no sibs 40% or having 1-2 sibs 58% Vs 3% or 83% in the control group). Infantile wheeze group of children had history of all allergic problems in comparison to the control group like atopic dermatitis (12%), allergic rhinitis (33%), allergic conjunctivitis (16%), wheeze in other sibs (8%), maternal asthma (17%), paternal asthma (8%). Exposure to tobacco smoke (ETS) was found in 47% cases of infantile wheeze as against 30% in the control group. The hemoglobin level was almost equal in both cases and the controls (10.51 g/dl Vs 10.30 g/dl). But the mean serum iron status was found significantly less in the infantile wheeze group as compared to the control group (45.08 Vs 71.52, p=0.00), though other parameters reflecting the iron status were slightly reduced in the control group (serum ferritin 24.25 Vs 22.95, TIBC 412.35 Vs 432.61, MCV 71.38 Vs 69.21, MCH 25.27 Vs 21.80 and MCHC 37.32 Vs 31.39). The babies of the infantile wheeze group were bom throughout all the seasons of the year (winter 33%, spring 23%, summer 13%, and rainy season 30%), which is in sharp contrast to the birth of almost all of the controls in the winter season (97%).

Conclusion: History of bronchiolitis, non-breast feeding, history of allergy in the parents (parental asthma) or in the child (atopic dermatitis, allergic rhino-conjunctivitis) exposure to tobacco smoke, reduced serum iron are risk factors to the development of infantile wheeze. Birth in the winter is protective for the development of infantile wheeze to a great extent.

03 Other Respiratory

Articles Published *Conference Presentation* *Disseration / Thesis* *Others*

Topics	Page

Foreign Body Aspiration in Children : Reports of 2 Cases

ARM Luthful Kabir, Farid Ahamed, Golam Mohiuddin Akbar Chowdhury, Ruhul Amin, Sadek Hossain

Introduction:

Aspiration of foreign body (FB) is frequently reported accidents during childhood in the literature. Clinical history are typically characterised by sudden onset of choking with cough and wheezing in a child who was playing with small objects or eating things like nut; in such cases diagnosis is obvious. There is a group of children who have repeated recurrence of pneumonia in the same lobe of the lung following history of FB inhalation and responding only briefly to antibiotic therapy. Asymptomatic inhalation of a FB, however, is a rare event and becomes apparent only after a certain period of time. There are varites of presentations starting from slight wheeze chronic respiratory distress such as cough, respiratory distress, recurrent pneumonia, bronchiectesis, peumothorax and pleural empyema or even sudden death. In long standing cases, the FB remains in the bronchial tree for a long time because of absence of respiratory symptoms or because it is undetected by bronchoscopy. It is suggested that these children should be carefully evaluated by radiological and instrumental procedures to differentiate FB inhalation from other pulmonary diseases. However, in many instances, owing to failure of bronchoscopy to identify or remove FB, bronchietesis and organising pneumonia, have been regarded as irreversible and the treatment of choice has been the surgical removal of the affected segment or lobe.

Aspiration of a foreign body in children is very rarely reported in our country. The present report deals with two cases of foreign body aspiration and their management in our context. First child was a 20 month old child who presented with asthma like symptoms of recurrent respiratory distress, cough and waking up from sleep at night. There was no definite history of foreign body inhalation.

In case of second child, an 8-yr old female presented with bronchiectesis of RML. In detailing the history, it was explored that the child had the experience of coughing and choking while taking dates 2 years back.

Case report-1

A 21 -month old male child, completely immunised, 1st issue of non-consanguineous parents admitted into the hospital with the complaints of recurrent respiratory distress for 2 months, cough for 1 month, waking up from sleep at night for 7 days. He was initially treated for pneumonia and then put on antiasthmatic medications before admission. He was never febrile during his illness. There was no definite history of sudden choking in the recent past. Father who was very much fond of groundnut and started giving groundnut to the baby for the last 2 months. The patient was sick, looking distressed and afebrile and was having occasional wheeze. There was tachypnia, chest indrawing, diminished breath

sound, rhonchi and crepitation in the right lung. Chest X-ray (CXR) showed obstructive emphysema involving whole of right lung.

The child was referred to a thoracic surgeon who performed rigid bronchoscopy on the child and a groundnut was removed from right principal bronchus. The child's wheeze and respiratory distress disappeared immediately. The repeat CXR showed no evidence of obstructive emphysema in the affected lung.

Case report-2

An eight-year-old female child presented with recurrent fever and cough for last 2 years. Detailed history revealed accidental inhalation of date-seed two years back with subsequent consultation of doctors who reassured in favour of spontaneous expulsion of FB as the condition of the child improved apparently. The child had no productive cough and finger clubbing. She had bronchial breath sound and dullness on permission with coarse crepitation over right mid-zone. CXR (PA and lateral views) showed obscured right border of heart and opacities and multiple ring shadows in the right middle lobe (RML). Fibreoptic bronchoscopy revealed granulation tissue in the entrance of RML. The child was referred to a thoracic surgeon for lobectomy. Lobectomy was done but unfortunately, the child died on the table because of persistent hypoxaemia.

Idiopathic Pulmonary Hemosiderosis: A Case Report

ARM Luthful Kabir, MA Hannan, Masudur Rahman, Selim Ahmed, M Quamrul Hassan, CA Kawser, MQ-K Talukder

Introduction: Idiopathic Pulmonary hemorrhage (IPH) is a rare disorder indicating alveolar hemorrhage and accumulation of iron as hemosiderin within alveolar macrophage. Pulmonary hemosiderosis may occur either as a primary disease of the lung or as a secondary complication of cardiac or systemic disease. In most instances in which the disease is primary, the cause is unknown. It is generally accepted that there are four variants of primary (idiopathic) pulmonary hemosiderosis: (1) an isolated form (2) associated with allergy to cow's milk (3) associated with either myocarditis or pancreatitis and (4) associated with progrossive (proliferative) glomerulonephritis (Goodpasture's syndrome). Two forms of secondary pulmonary hemosiderosis have been described: one form is due to cardiac disease involving left ventricular failure or pulmonary venous hypertension such as occurs in mitral stenosis. The elevation of venous pressure may result in recurrent or chronic capillary oozing of blood into the alveoli with resultant hemosiderosis of lungs. The other form is associated with collagen vascular disease. In children, idiopathic pulmonary hemosiderosis (IPH) is more common than secondary varieties. Clinically, IPH is manifested as a triad of spontaneous alveolar hemorrhage (hemoptysis), diffuse parenchymal infiltrates on chest x-ray and iron deficiency anemia. This condition was first described by Virchow in 1864 as "brown lung induration". In 1931, Ceelen reported the clinical picture of IPH in two children. The first antemortem diagnosis of IPH was reported by Waldenstrom in 1944. Although its etiology remains unknown, IPH is considered to be an immune mediated disease. Corticosteroids have been used in the treatment of IPH, and they have been thought to decrease the frequency of hemorrhage. However, other studies suggest that they do not have any effect on the course or prognosis of this disease. Other immune modulators have also been used with variable success including hydroxychloroquine, azathioprine and cyclophosphamide. We report the first case of idopathic pulmonary hemosiderosis in a Bangladeshi child who was diagnosed abroad and treated with all available medications but ultimately succumbed due to massive pulmonary hemorrhage.

Case Summary: The girl was first admitted to the Institute of Child and Mother Health, Dhaka at the age of 3 years and 4 months with intermittent pallor requiring blood transfusion (4 times) since 2nd month of life and persistent cough and respiratory distress since 2 years of age. Cause of microcytic hypochromic anemia and 'pneumonia' could not be ascertained in spite of many investigations including bone marrow and Hb-electrophoresis. The child also suffered from persistent diarrhea, repeated ear infection, contact dermatitis and allergic conjunctivitis. She was the second daughter of consanguineous (1st degree) parents. She was moderately pale and had tachypnea, chest indrawing, bilateral rales, ronchi with finger clubbing and mild hepatosplenomegaly. CXR showed diffuse infiltrates in both lungs. CT scan of chest was inconclusive. The parents were advised to go abroad to exclude cystic fibrosis. At National University Hospital

(NUH), Singapore, she was found to have persistent low (87%) SPO_2 by pulse oxymetry. A high-resolution CT (HRCT) scan of the chest with 1 -mm axial thin sections of both lungs revealed extensive ground glass opacification of both lungs with patchy areas of consolidation. Open lung biopsy showed interstitial fibrosis but no honeycombing. There was significant lymphoplasmacytic infiltrate within the interstitium as well as prominent macrophage aggregates in some of the alveoli spaces. No evidence of hyaline membranes, granulomas, siderophages, cytopathic viral changes, bronchiolitis obliterans nor histiocytosis-X seen. Other relevant investigations showed normal immunoglobulin levels except raised IgE, normal serum complements (C3, C4), negative sweat test, positive anti-DNA antibody, ANA and p-ANCA (perinuclear antineutrophil cytoplasmic antibody).

The findings confirmed the presence of "Autoimmune diffuse interstitial lung disease". She was prescribed long-term prednisolone, hydroxychloroquine, inhaled Fluticasone and home supplemental oxygen.

She was apparently stabilized in her condition in the subsequent 2 years but maintained poor weight gain (15 kg all along), though gained height of 7 cm and experienced 3 attacks of acute respiratory distress associated with a drop in her hemoglobin level to about 7gm/dl. On follow up in NUH in next two years, the diagnosis was revised in favour of Idiopathic Pulmonary Hemosiderosis (IPH) on the basis of bronchoalveolar lavage (BAL) finding of hemosiderin-laden macrophage. On return from NUH, she was followed up for symptoms of cough, wheeze, tachypnea, breathlessness, weight and height gain, BP, and oxygen saturation by pulse oxymetry.

She continued to have the symptoms of recurrent respiratory distress and the requirement of further blood transfusion. She developed severe respiratory distress in February, 2003 and died in the Intensive Care Unit of Combined Military Hospital, Dhaka.

Review Article *Bangladesh J Child Health 2005; Vol 29 (3) : 99-103*

Pediatric Flexible Fiberoptic Bronchoscopy

ARM Luthful Kabir, Jashim Uddin Majumder, Al Amin Mridha, Majubur Rahman, Md. Ruhul Amin

Introduction:

Flexible Fiberoptic Bronchoscopy (FOB) has revolutionized the practice of modern pulmonary medicine. Bronchoscopy is the most commonly used invasive diagnostic and therapeutic procedure in pulmonology. It is estimated that as many as 98% of all bronchoscopies are currently performed using the flexible instrument, and most bronchoscopists have never been trained in the technique of rigid bronchoscopies. Flexible airway endoscopy has been used in clinical and research investigations of pediatric airway and pulmonary disorders for nearly 25 years. The evaluation and management of a variety of airway and pulmonary diseases in children has improved so also research investigations using bronchoalveolar lavage (BAL) and biopsy specimen have contributed extensively to our understanding of lung inflammation and infection. Improvements and new developments in fiberoptic endoscope technology, training of airway endoscopists, preoperative and sedative medications, patients monitoring continue to refine and enhance the pediatric clinical and research applications of flexible airway endoscopy.

FOB has been utilized recently for diagnosis and therapy of airway and pulmonary disorders. Pediatric FOB differs significantly from that of adult in regard to anatomy and physiology of the central airways, indications, sedation and monitoring, common diagnostic findings and therapeutic options.

Bronchoscopy may provide direct anatomical information or indirect information from secretions sampling, bronchial and transbronchial biopsies.

FOB can be performed in any age group starting from 1-week old premature infant (600 g) to any age of children. It can be used in children with versatile conditions like immunodeficient children, immunocompetent children, being placed in ventilator, HIV-associated pneumonia and pulmonary tuberculosis and foreign body aspiration etc.

History of FOB

Gustav Killian of Germany first used rigid bronchoscope in 1897. Until late 1960s people were using refined rigid bronchoscope of Chevalier Jackson of USA. In 1968, Shigeto Ikeda of Japan introduced flexible FOB in adults. In 1978, Wood and his colleagues introduced pediatric FOB. In India, N Somu, first did the pediatric flexible FOB in 1988. In Bangladesh, rigid bronchoscopy was introduced in private sector in 1950s. In Govt sector, rigid bronchoscopy was started at the Institute of Diseases of Chest and Heart (IDCH) in 1962. In 1980s Flexible Fiberoptic Bronchoscopy (FFB) was first introduced at the Combined Military Hospital (CMH) in adults then at IDCH in 1995. The FOB in children was first started at the Institute of Child and Mother Health (ICMH) in 2000.

Indications for bronchoscopy in pediatric patients Table-1 lists the indications for flexible fiberoptic bronchoscopy in pediatric patients as outlined by American Thoracic Society.

Description of a pediatric fiberoptic bronchoscope (FOB)

The pediatric bronchoscopes are defined as those scopes with outside diameters of the insertion tube of less than 5.5 mm. (range 5.3 to 2.2). The insertion tube of the scope contains thousands of fiberoptic bundles i.e. fine glass fibers of 10-micron diameter that transmit the image and provide illumination. Light from a light source enters through one end of the fiber and after repeated internal reflections is transmitted to the other end. Flexible scopes also have a small suction channel and a provision for controlled angulation of the distal end of the instrument.

Table-I

Lists of the indications for flexible fiberoptic bronchoscopy

- Chronic stridor
- Persistent atelectasis
- Persistent wheezing
- Persistent or chronic cough
- Recurrent or persistent pulmonary infiltrates
- Hemoptysis
- Lung lesions having radiographic abnormality
- Suspected bronchial or tracheal foreign body
- Vocal cord dysfunction
- Removal of airway secretions and mucus plugs
- Evaluation of upper airway trauma (accidental or prolonged intubation)
- Samples of lower airway secretions and/or cells by bronchoalveolar lavage
- Assessment of position, patency, or damage related to endotracheal or tracheostomy tubes
- Assessment of damage from toxic inhalation or aspiration
- Brush biopsies or transbronchial biopsies for pathology
- Aid to difficult intubations
- Therapeutic bronchoalveolar lavage

Requirements for a bronchoscopy suite

- An air-conditioned room with a central oxygen source having a system for humidified oxygen delivery with the appropriate connectors and with pediatric high flow capabilities.
- Appropriate pediatric sized flexible fiberoptic bronchoscope with a light source.
- Two suction setups, one for use through the bronchoscope and another for control and care of oral secretions.
- Resuscitation equipment with bag, mask, laryngoscope blades, and endotracheal tubes sized appropriately for infants and children.

- Mechanical monitors like cardiac monitor for continuous electrocardiography, pulse oximetry.
- Personnel: (1) bronchoscopy nurse who assists with medications, specimen collection, equipment care, and with specific technical needs of the procedure (2) one assistant for monitoring the patient and (3) one or two for holding the child during the procedure. It is preferable that all the personnel involved in the procedure should be trained in at least basic life support and pediatric advanced life support.
- The bronchoscopist should be attired with sterile gown, cap, mask and gloves to make the procedure a sterile one taking other aseptic measures.
- The CXR or CT films are displayed in the view box of the bronchoscopy room for ready reference.

Technique of bronchoscopy in children

Preparation of the patient

- Maintenance of a quiet reassuring atmosphere.
- Good counseling of the parents / older child about the procedure depending on the level of education.
- Taking written consent of the parents.
- Maintenance of an empty stomach at least 4 hours prior to bronchoscopy for all children greater than 5 years and clear liquids up to 2 hours for infants and young children before the procedure.
- CBC, blood group, bleeding and coagulation profile is carried out.
- An IV access is always inserted for use in case of any emergency.

Sedation and other medications of the child

The form of sedation used most commonly for bronchoscopy is known as "conscious sedation" and is defined as a medically controlled state of depressed consciousness that:

- Allows protective reflexes to be maintained
- Preserves the patient's ability to maintain a patent airway independently and continuously unless intubated and
- Permits response by the patient to physical stimulation or verbal command. Conscious sedation is achieved by intravenous (IV) administration of midazolum 0.05-0.1 mg/ kg over 2-5 minutes and IV meperidine 0.5-2.0 mg/ kg over 2-5 minutes or IV fentanyl 1-2 mg/kg or IV ketamine 0.5-2.0 mg/kg
- 2% nasal lignocaine jelly is applied into the selected nostril and the opposite nostril is occluded to allow the jelly to go inside or the child (if older) is asked to sniff by taking a deep breath
- Atropine 0.02mg/kg IV given just prior to procedure or 20 minutes before if given IM for vasoconstriction and secretion control

- Administer 100% oxygen to the child for 3-4 minutes prior to insertion of scope to prevent hypoxia during the procedure

Topical anesthesia

Topical anesthesia of the upper airway applied after intravenous sedation greatly facilitates the examination. Even with adequate intravenous sedation, topical anesthesia can minimize laryngospasm and vagal stimulation as well as minimize cough reflex. Lidocaine solution is used at 0.5% to 1.0% concentrations for patients less than one year of age and in 1% to 2 % concentrations for patients of one year or older. Viscous lidocaine in concentrations of 1% to 2% can be used for nasal anesthesia and lubrication prior to the insertion of the bronchoscope. Even nebulised lignocaine in a dose of 8mg/kg can be given.

Connection and adjustment of the FOB

The following steps are followed to prepare the FOB

- Connection of the FOB with the light source
- Connection of the light source with voltage stabilizer and the bronchoscope
- Adjustment of the eye piece of the bronchoscope
- Connection of the bronchoscope with the suction apparatus
- Checking the suction function of the bronchoscope and the sucker as well using normal saline
- Cleaning of the suction bottle with cydex to sterilize it so that BAL sample could be collected
- The lignocaine jelly is also applied to the outer surface of the distal end of the scope

Insertion of the bronchoscope

- Nasal route is preferred as it avoids the scope from being bitten and damaged
- Visualisation of the glottis
- Instillation of two sprays of 1%-2% xylocaine into the glottis (two times, one minute apart)
- Wait for one minute to allow the vocal cord to be paralised
- Passing through the vocal cord part (it is the most difficult part of doing bronchoscopy)
- Monitoring of the patient by pulse oximeter for SaO_2 and heart rate by cordiac monitor (by an anesthetist)
- Spray 1%-2% xylocaine into carina, or more may be needed if patient coughs
- Looking into the right principal bronchus and left bronchus and into their ramifications
- Doing special techniques like bronchoalveolar lavage (BAL), protected BAL, tracheobronchial biopsy and bronchial brushings
- Withdrawing of the insertion tube.

Of all the special techniques, BAL is most frequently used in infants and children.

Bronchoalveolar lavage (BAL) procedure

1. BAL is performed after routine inspection/ examination of the tracheobronchial tree and before biopsy or brushing is taken.
2. The suction channel of the bronchoscope is thoroughly rinsed with saline
3. The suction trap is changed
4. The tip of the bronchoscope is advanced until it is wedged into a subsegmental bronchus, usually at the level of the fourth and fifth branching
5. Both segments of lingula and right middle lobe are routinely lavaged and analysed separately
6. Other lobes may be lavaged if radiologically abnormal
7. One aliquot of total 3 aliquots of 0.9% sterile saline (prewarming the lavage fluid to prevent coughing and bronchospasm) is infused with a syringe with or without a 3-way stopcock into the suction port of the bronchoscope. (The amount of lavage fluid is not more than 5% to 15% of FRC of the child (FRC=1.3 to 1.5 X height orlength in cm)
8. The fluid is then removed from the lung by the use of 50-80 mm Hg of negative pressure from an usual suction apparatus and collected into 50-100 ml specimen traps (made of polyethylene or polycarbonate)
9. Patient should be instructed to inhale and exhale deeply during fluid aspiration and maintain the suction channel of the bronchoscope in the centre of the airway lumen
10. The lavage procedure is repeated for five times in each site
11. The BAL fluid is sent for cell count, Gram stain, culture, AFB, and other examinations like malignant cell, hemosiderin laden macrophage etc.

Complications of flexible FOB

Serious complications related to flexible FOB are uncommon. The following are the most common complications that may occur related to flexible FOB in children:

Procedure related	Medication related
Transient bradycardia	Patient discomfort (undersedation)
Transient hypoxia	Respiratory depression (oversedation)
Epistaxis	Inadequate topical anasthesia
Laryngospasm	Vagal stimulation
Pneumothorax	Laryngospasm
Hemoptysis	Excessive cough
Nosocomial infection	Bradycardia
Aspiration	Urticaria paradoxical agitation (i.e benzodiazepines)

Contraindications for FOB

There are no contraindications to flexible FOB in children. The following situations can poise serious risk during pediatric bronchoscopy:

- Coagulopathy
- Bleeding diathesis (that can not be corrected)
- Massive hemoptysis
- Severe airway obstruction
- Severe refractory hypoxia
- Unstable hemodynamics
- Arrhythmias
- Inadequate training in pediatric life support

After care of the bronchoscope

- The insertion tube is immersed into cidex in a tray for 15-20 minutes
- Cleaning the insertion tube with normal saline before reuse if needed
- Final immersion of the insertion tube into cidex
- Taking out the bronchoscope from cidex and placing on a flat surface
- Wiping the outside of the bronchoscope with a gauge piece
- Cleaning the suction channel with a long and slender brush with short and repeated to and fro movement
- Cleaning the shaft of the suction channel with another short brush
- Cleaning the mouth of the suction channel with the ultra-short broad brush
- Cleaning the suction channel with normal saline by giving full connection again
- Drying the suction channel with air giving suction with air only
- Applying the oil in the mouth of the suction channel
- Placing the bronchoscope into the brief case with care.

Original Article *Bangladesh J Child Health 2006; VOL 30 (1/2/3): 12-16.*

Management of Respiratory Foreign Body- A Twelve Years Experience with 382 Cases

Golam Mohiuddin Akbar Chowdhury, AKM Akramul Haque, Zillur Rahman,
ARM Luthful Kabir, Ruhul Amin, Nawab Tahsin Uddin

Objectives: To evaluate the clinico-demographic profile and management of foreign body (FB) aspiration in hospitalized patients.

Methodology: This was a retrospective study conducted at the National Institute of Diseases of the Chest and Heart (NIDCH), Dhaka during the period of October 1994 to February 2006. Medical records were used for collection of cases. The diagnosis of FB aspiration was made from documented presenting features, physical findings, investigations of chest radiology, CT scan whenever done and management outcome with rigid bronchoscopy and surgical interventions like bronchotomy or resection surgery.

Results: Most of the patients 374 (97.5%) were children up to 15 years of age with the peak age of 1-10 years (81.3%). Males were affected more (63%) than females (37%). The majority of the patients (96%) were from poor socio-economic status. Most of the patients 297 (77.7%) presented early (within 7 days of aspiration) with cough and respiratory distress. There was late (after 7 days up to 12 years) presentation in 85 (22.2%) cases with respiratory complications. FB was found to be radio-opaque in 122 (31.9%) cases on chest imaging. Rigid bronchoscopy was attempted in all cases initially and it was successful to remove FB in 99.6% cases in patients who presented early. But it failed to remove the FB in 49 (57.6%) of cases when the patients presented late. Most of the FBs were of natural in origin 247 (64.6%) and the number of artificial FBs was less 135 (35.3%). FBs found impacted more on the right bronchial tree in 230 (60.2%), followed by left side in 121 (31.6%) and central airway in 31 (8.1%) cases. In failed cases, bronchotomy, lobectomy and pneumonectomy were the other modalities (57.6%) of management.

Conclusion: Children of the age group 1-10 years were found most vulnerable for FB aspiration. FB of natural origin were common in our situation. FBs were impacted mostly on the right side. Removal of FB by rigid bronchoscopy was excellent when the patients presented early. Other difficult modalities of management like bronchotomy, lobectomy and pneumonectomy were needed in cases of late presentation.

Original Article (Indexed) *Mymensing Medical Journal 2010; 19(3): 323-29*

Determinants of Risk Factors of Neonatal Pneumonia

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ARM Luthful Kabir, RN Sarkar

Background: Pneumonia is one of the common causes of morbidity and mortality in the neonatal period. However, data on determinants of risks in neonatal pneumonia in developing countries need to have continued evaluation to reduce its high prevalence and fatal outcome through identification and elimination of its risk factors.

Objective: To determine the risk factors of neonatal pneumonia and their outcome.

Methods: All the neonates admitted in the department of Pediatrics, Dhaka Medical College & Hospital during Nov. 2007 to Nov. 2008 were enrolled in this case-control study. The neonates having pneumonia were compared to those without pneumonia.

Results: 50 cases and 50 controls met the predefined inclusion criteria. Results showed that neonates with pneumonia more often presented with low birth weight ($p<0.05$), inadequate antenatal care ($p<0.001$), normal vaginal delivery ($p<0.05$), home delivery ($p<0.001$), delivery by untrained personnel ($p<0.001$), neonatal resuscitation ($p<0.001$), intrapartum fever ($p<0.01$), obstetric problem of mother ($p<0.001$), foul smelling liquor ($p<0.01$), prolonged rupture of membrane ($p<0.001$), and prolonged labour ($p<0.05$) compared to those without pneumonia. In multivariate analysis, inadequate antenatal care (OR 168.9), home delivery (OR 13.8), intrapartum fever (OR 225.9), obstetric problem of mother (OR 33.4), requirement of resuscitation (OR 12.5), and prolonged labour (OR 15.2) have been revealed as independent risk factors of neonatal pneumomia.

Conclusion: The risk factors of neonatal pneumonia are inadequate antenatal care, home delivery, intrapartum fever, obstetric problem of mother, requirement of resuscitation, and prolonged labour

Pulmonary Alveolar Microlithiasis (PAM) in a Child – The first Case Report from Bangladesh!

ARM Luthful Kabir, Abid Hossain Mollah, Golam Mostafa, Golam Mohiudin Akbar Chowdhury, Selim Ahmed, Shafiuddin Ahmed, Md. Ruhul Amin, Kazi Selim Anwar

Introduction

Pulmonary alveolar microlithiasis (PAM) is a rare disease, characterized by intra-alveolar calcium deposits and a paucity of symptoms in contrast to imaging findings, radiologically. The etiology of the disease is still unknown though an speculated to be inherited in origin owing to local enzymatic defect as a result of calcium deposition.

We report-s here a rare case of PAM in a 4.7 years old girl. This is the first ever report of such a case from Bangladesh and rare in global pediatrics.

The case report

This girl 'X' of consanguineous parents, presented with fever for 25 days some nine months back. She had no history of cough, hemoptysis, chest pain, vomiting, jaundice, abdominal pain, headache, joint pain along with rash in the body. Reportedly, she had been suffering from recurrent respiratory distress since 2 month of age. The parents gave a history of asthma in the family but none of them had any contact with any TB patient.

Initially, she was hospitalized into a nearby health care center for 7 days. She was given anti-tubercular therapy (ATT) for 9 months because of diffuse bilateral lung mottling, though Montoux test (MT) was negative. The mottling rather increased in intensity and gradually became nodulo-striate.

She looked well, not distressed, acyanotic and afebrile with a respiratory rate of 34/min, pulse of 108/min and had no lymphadenopathy. Anthropometrically, her body weight was 13.6 Kg (-2.4 SD) and height was 93 cm (-2 SD). She had vesicular breath sound but no added sound, S1 and S2 were audible in all areas and neither had murmur nor organo-megaly.

Investigation revealed :Hb 11.8 g/dl, TWBC 12,000/cmm, N 45%, L 50%, E 03%, M 02% ESR was 07mm in 1st hour, blood urea 19 mg/dl, creatinine 0.4 mg/dl, ALT 29 U/L, serum Na++ 145 mmol/L, K+ 4.0 mmol/L, Cl-- 110 mmol/L, CO2 29 mmol/L, S. Ca++ 9.87 mg/dl, inorganic phosphate 4.51 mg/dl, ALP 214 U/L, BT 4 min 10 sec, CT 5 min 10sec, MT 2 mm. FCFT for filarial negative. CXR showedfine nodular shadows with increased interstitial markings in both sides, mostly in the mid and lower zones . Horizontal fissure was thickened.

Echocardiogram revealed normal cardiac anatomy.

The child was subjected to fiber-optic bronchoscopy. Bronchoalveolar lavage (BAL) showed TLC 60/cmm, pulmonary macrophage 55%, N 10%, L 30%, E 02%, mast cell 03%. CXR Comments: smear prepared from centrifuged deposit showed moderate cellular material containing polymorphs, lymphocytes, pulmonary macrophages some containing hemosiderin pigments (about 10%), a few red cells and a few reactive bronchial epithelial cells. Finally, video assisted thoracoscopic biopsy was done on this child. Microscopic sections showed of the lung tissue having haematoxiphilic large round bodies within the alveoli. These bodies were concentrically laminated and situated loosely within the alveolar lumen. The alveolar walls surrounding them showed hypertrophied pneumocytes and delicate fibrosis. Neither any granuloma nor any -evidence of malignancy was seen. Impression: Pulmonary alveolar microlithiasis. Blood or sputum culture: yielded no growth of any pathogenic micro-organism 48 hours after inoculation at 37 degree C Blood Agar and Mac Conkey's Agar media.

Bangladesh J Child Health 2013; Vol 37 (2) : 77-78

Too Late Diagnosis of Foreign Body Aspiration in Children Can Lead to Damaged Lungs

ARM Luthful Kabir

Foreign body aspiration (FBA) is not uncommon in our country. Ninety percent of children who aspirate foreign bodies (FBs) are younger than 3 years and two thirds are boys. There are several reasons for this: toddlers lack discretion concerning objects ingested, exploring the environment by oral tactile sensation; they lack molar teeth and thus chew foods poorly; and they often engage in play while eating. Foods and toys account for approximately 90% of FB aspiration in children.

The manifestations of aspiration depend on the size of the FB, its composition, its location, the degree of blockage, and the duration of obstruction. History is of paramount importance in the diagnosis of FB aspiration because, the physical examination and radiographic study can be unremarkable as time passes after the acute event. The characteristic history of a choking crisis or gagging episode, followed by a coughing spell, should be carefully considered from the care takers.

Most inhaled FBs travel distally into the tracheobronchial tree, but laryngeal impaction occasionally occurs and accounts for the highest rate of mortality in the aerodigestive tract (45%). Fortunately, most smaller, non-obstructing objects bypass the supraglottis, glottis, and trachea and lodge most commonly in the right main stem bronchus. Depending on the size, location, and nature of the FB, local irritation produces complaints that include cough, inspiratory stridor, hoarseness, wheezing, shortness of breath, and fever, symptoms that mimic the more common diseases of the respiratory tract, including asthma, bronchiolitis, laryngitis, pharyngitis, and croup. The absence of obvious symptoms after a witnessed choking episode does not exclude the presence of a retained FB. Following the initial episode of paroxysmal coughing, an asymptomatic lag period occurs as the surface sensory receptors of the respiratory tract undergo physiologic adaptation. This situation may falsely reassure the parent and the physician that the child has cleared the airway.

Only two thirds of patients seek treatment within one week following aspiration. Thus, the first symptoms prompting medical attention may represent a complication of FB impaction, such as chronic cough and fever due to recurrent or persistent pneumonia, bronchitis, or even bronchiectasis. Atypical asthma is a common misdiagnosis assigned to unsuspected airway FBs. Physician-related factors still account, for the largest portion of delay in diagnosis, with reliance on a negative radiographic report being one of the most important factors. If the initial attack is not inquired or ignored, the child may develop recurrent respiratory symptoms with ultimate development of recurrent pneumonia followed by bronchiectasis and damaged lungs.

It is believed that delay could have been avoided with a more meticulous history taking, thorough physical examination, necessary investigations and appropriate referral. The

delay in the diagnosis is due to lack of awareness of FBA in children, not inquiring about the episode of aspiration, and the ignorance about the consequences of FBA in children and further course of management. Sometimes, the attending doctor does not pay any heed to the complaints of mother about the episode of choking crisis following aspiration, rather reassure the mother of natural passage of the aspirated foreign body with stool. It occurs particularly in the situation where there is apparent improvement as the aspirated foreign body shifts from the common airway to any of the principal bronchus. Sometimes, diminished breath sound or localized wheeze may be heard on auscultation. Doctors confuse the clinical problem of the child as 'asthma'.

The complaints of the parents should be given crucial importance, the child is to be subjected to necessary investigations like chest x-ray and invasive procedures like fiberoptic bronchoscopy and if needed, rigid bronchoscopy to take out the aspirated foreign body. We have very limited facility for endoscopic examination of the airway by fiberoptic bronchoscopy, particularly in children below 10 years of age. The endoscopic airway examination in children was initiated in our country but could not be sustained and no paediatrician is so far found to have developed interest in this sort of very useful and much needed investigation. This results in sufferings of the parents of the affected children with repeated hospitalization in different hospitals with the expectation of better treatment without fruitful results. This leads to the wastage of much time allowing the lungs to be damaged progressively.

The diagnosis of FBA can be delayed in terms of days to weeks. But the length of much delay to the extent of years is not usually reported in the literature as the author experienced. The cause of such delay results from unawareness of the seriousness of FBA, ignorance about the symptoms and physical features of FBA and lack of readily available definite treatment, in terms of skilled manpower and facility for airway endoscopic examination in the country.

To prevent the delayed diagnosis of FBA: witnessed aspiration, coughing and choking crisis, unilateral decreased breath sounds and abnormal chest radiology need to be given utmost importance along with pediatric fiberoptic and rigid bronchoscopy services should be readily available.

Case Report *Bangladesh J Child Health 2014; Vol 38 (2) : 94-97.*

A Tale of Late Diagnosis of Foreign Body Aspiration in Children with Damaged Lungs

ARM Luthful Kabir, Abid Hossain Mollah, Md. Ruhul Amin, Taslim Uddin Ahmed, Rahat Habib

Introduction

Foreign body aspiration (FBA) in children is not uncommon in our context. The child usually presents with an initial episode of choking, coughing and respiratory distress. If the initial attack is ignored, the child may develop recurrent respiratory symptoms with ultimate development of recurrent pneumonia and bronchiectasis with damaged lungs in the long run. Only two thirds of patients seek treatment within 1 week following aspiration.The diagnosis of FBA can be delayed in terms of days to weeks. But much delay to the extent of years is not usually reported in the literature. Two cases of FBA occurring long 3-4½ years back with the development of bronchiectasis have been presented. The very simple question regarding any history of choking and coughing following food intake was not enquired or ignored in these cases leading to protracted sufferings on the part of the parents and patient had subsequent lung damage.

Case-1

A 3½-years old male child had been suffering from 'recurrent pneumonia' since 6 months of age. He has been hospitalized in a medical college hospital for 4 times for his recurrent chest problem. On query, it was interestingly revealed that there was history of aspiration of 'a piece of hard coconut' at the age 6 months. The victim had immediate coughing and choking and he was immediately rushed to local registered doctor who reassured as the condition of the child improved apparently with time. Subsequently, the child had recurrent fever, cough and respiratory distress and repeated hospitalization. The child was found to have diminished movement on the left lower chest anteriorly, respiratory rate 32/min, apex beat in the 5th intercostal space lateral to mid clavicular line, dull on percussion over left lung posteriorly with coarse crepitation. The chest findings were normal on other areas of lung fields. Chest x-ray showed shifting of heart shadow to the left with features of collapse consolidation in the left lower zones. Fiberoptic bronchoscopy (FOB) done by the first author revealed inflammatory changes in the left lower lobe and part of lingular segments. CT scan of lungs showed loss of lung tissue with collapse of left lower lobes.

Case-2

A 5½-years old male child had accidental aspiration of some parts of TV remote at one year of age followed by choking, coughing and vomiting of some pieces of materials. Mother immediately consulted a local pediatrician who advised to observe the stool on the subsequent days to watch further passage of 'ingested materials of TV remote'. The physician even did not suggest a chest x-ray in response to mother's complaint. Since then the child had often and on recurrent attacks of fever, cough and respiratory distress needing antibiotics and asthma medications for improvement of his condition being advised by different pediatricians. He had features of collapse-consolidation in right lower lobe both clinically and radiologically. Finally, he was advised CT scan of lungs which showed a suspected FB and fibrosed right lower lobe following bronchiectasis. The child underwent lobectomy of right lower lobe and a TV remote knob was explored after long four and a half years!

Pulmonary Arterio-Venous Malformation (PAVM): A Rare Case Report and Review of Literatures

Mollah AH, Islam MS, Ghafoor N, Morshed SS, Kar TK, **ARM Luthful Kabir**, Tabassum N

A 6-year-old boy from Comilla, was admitted in Dhaka Medical College Hospital with exertional dyspnea, central cyanosis, clubbing and finally diagnosed as pulmonary Arterio-Venous Malformation (PAVM) by bubble contrast echocardiography, and pulmonary CT angiography. As PAVM is rare in children, it is often not thought of in differential diagnoses and the diagnosis remains in disguise. In this report, we described the clinical presentation of 6-year-old child with PAVM and also how to investigate the case to get the diagnosis.

Introduction

Pulmonary arterio-venous malformations (PAVM) are rare vascular anomalies of the lungs in which abnormally dilated pulmonary vessels provide a right to left shunt between the pulmonary artery and veins. They are generally considered direct high flow, low resistance fistulous connections between the pulmonary arteries and veins. Most of these anomalies are congenital, but only few are acquired. Although the vascular defects are present since birth, they are seldom manifested clinically until adult life and the common manifestations are exertional dyspnea, easy fatigability, epistaxis, hemoptysis and and palpitations. The diagnosis is suspected on contrast echocardiography and confirmed by pulmonary CT as well as conventional pulmonary angiography. Treatment is therapeutic embolization rather than lung resection.

Case Report

A 6-year-old boy was admitted in the Department of Pediatrics, Dhaka Medical College Hospital, Bangladesh in September 2013 with history of exertional dyspnea for last 2 years, weakness and easy fatigability during the previous 6 months. During the last 4 months, his mother noticed bluish discoloration of his lips and tongue. This bluish appearance worsened when he used to cry or became fretful and improved during sleep and rest. He had neither history of feeding difficulty nor any cyanotic spells.

His antenatal, immediate post-natal period or whether any history of consanguinity of marriage between parents was unknown as the boy was adopted. His infancy and early childhood was uneventful except with minor ailments like cough, common cold. He was completely vaccinated and his milestones of development were normal. On clinical examination, the child found alert and cooperative with age appropriate growth and development. He had cyanosis of lips, tongue, clubbing of fingers and toes and congested conjunctiva. Skin survey was normal and there was no telangiectasia on skin or mucus membrane. Oxygen saturation (SPO_2) was 78% in room air.

Pulse was full volume and rate was 88/min, Blood pressure 110/60mm Hg. The apex beat was very prominent but not displaced. No abnormal cardiac sounds or murmurs or bruits were audible over the chest or on abdomen. Examination of the respiratory system and other systems were found normal.

Investigations showed hemoglobin 13.9g/dl, hematocrit 44%. His SGPT 56 IU, Serum albumin 36g/L, Serum creatinine 0.34mg/dl. Mantoux test induration 05mm. X-Ray chest was unremarkable except increased vascular markings on both lower zones. ECG showed sinus tachycardia with T-wave inversion in leads V1 - V3. Conventional echocardiogram and color Doppler study revealed normal cardiac anatomy. Bubble contrast echocardiography was done after introducing agitated saline solution into the right antecubital vein and this demonstrated the presence of profuse micro-bubbles in the left atrium and left ventricle after 5 cardiac cycles following contrast pass through right atrium and right ventricle. This gave the impression of a PAVM as in this malformation, there is rapid transit of blood flow through the pulmonary veins bypassing the capillaries. Aorto-Pulmonary CT angiography showed small dilated tortuous vessels representing capillary talangiectasia, distributed in both lung parenchyma, predominantly in the posterior aspect of both lower lobes and this signify pulmonary arterio-venous malformation. Finally, Pulmonary angiography demonstrated arterial and venous phase with absence of capillary phase of pulmonary circulation and which confirmed the diagnosis of PAVM.

Congenital Pulmonary Airway Malformation (CPAM): A Case Report

Taslim Uddin Ahmed, Sudipta Roy, **ARM Luthful Kabir**, Kona Chowdhury, Mahmuda Hassan, Md. Abid Hossain Mollah, Rubaiya Noushin, Mohammad Abdur Razzaque6, Raihana Noor Khan, Md. Hamidur Rahman

Introduction

Congenital pulmonary airway malformation (CPAM) is a rare congenital abnormality that presents in 0.004% of all pregnancies, and constitutes <25% of all congenital pulmonary anomalies. About 15%- 50% of cases of congenital cystic lung disease are reported to be CPAM. Congenital cystic adenomatoid malformation (CCAM) was first described by Ch'in and Tang in 1949 and is now also known as CPAM due to the new classification system established by Stocker et al. There are five types of CPAM. CPAM is a rare congenital lung lesion with an estimated incidence 1:25,000 to 1: 35,000 live births. The mortality rate is high with 12.5% death rate in newborn. CPAM are not associated with race, age , maternal exposure to any given factor or genetic factor.6 It occurs equally across races and gender. Typically, it is diagnosed on prenatal ultrasound, however, in the literature, it is also infrequentlv diagnosed in children and even less commonly in adults.1 More than 90% of these cases have been reported to be diagnosed in the first two years of life. This malformation can spontaneously regress, increase in size or cause non-immune hydrops fetalis. Its usual postnatal presentation is respiratory distress in the newborn period. This may be due to pulmonary hypoplasia, mediastinal shift, spontaneous pneumothorax, and pleural effusions secondary to hydrops. Recurrent chest infections may be a feature later in life. The most common presentation in adults is recurrent and resistant infections. However, some of these lesions are also found incidentally on chest imaging in asymptomatic patients. Other common presentations include pneumothorax, dyspnoea and haemoptysis.

Case Report

A 6 month old baby girl was admitted to our paediatric ward of AWMC suffering from intermittent nonproductive cough for 15 days, high grade intermittent fever along with respiratory distress for 2 days in association with loose mucoid stool and occasional vomiting for same duration. She was born after an uneventful 37 weeks of gestation. Her birth body weight was 3500 gm. Prenatal ultrasonography and postnatal physical examination revealed no abnormalities. Mother did not give H/O previous hospitalization for any region after birth before this illness. She was the only issue of non consanguineous parents. Mother had no previous miscarriage or abortion and there was no family history of lung disease or malignancy.

On admission, the child was dyspneic and irritable having intercostal and subcostal recession. She had fever of 1020 F, tachypnea with respiratory rate 80 / min, tachycardia with heart rate 134/ min. Her Weight (W) 8.4 Kg, Length (L) 66 cm, Occipitofrontal Circumference (OFC) 42 cm-on 50th centile, W/L on 75th centile, L/A on 90th centile with age appropriate milestones of development. Breath sound was slightly diminished over left lower lung field with few crackles. Her initial investigations revealed total leukocyte

count (TLC) 26,000/ cmm, neutrophil (N) 60%, erythrocyte sedimentation rate (ESR) 59 mm/hr, C-Reactive Protein (CRP) 334 mg/ L. Chest X Ray (CXR) findings was normal except some increased translucency at left cardiophrenic region. An echocardiogram was performed to exclude cardiac anomalies that revealed Patent Foramen Ovale (PFO). Blood and urine culture showed no growth. Septicaemia with PFO was then considered. She was given Inj. Ceftriaxon in addition to other symptomatic and supportive treatment. For persistent irritability, continuous crying and gastrointestinal tract symptoms an ultrasonography (USG) of abdomen was performed that incidentally revealed 7.4 x 4.3 cm sized echogenic area with multiple cystic and hypoechoic lesions seen in the left pleural space adjacent to the heart. This findings directed us to perform a Computed tomography (CT) scan of Chest that showed multiple small sized cystic areas in apical, posterior basal and lateral basal segments of left lower lobe. Small air space solid lesion is seen in apical and basal segments of lower lobe with slight shifting of mediastinum to left – suggestive of type II congenital pulmonary airway malformation of left lower lobe of lung with small consolidation of left lower lobe with left sided pleural effusion. So our final diagnosis was Congenital pulmonary airway malformation (CPAM) with pneumonic consolidation. The girl became afebrile after 5 days of hospital stay. Respiratory distress and general condition improved gradually. A full course of antibiotic treatment was given. Then she was referred to thoracic surgeon for surgical resection. The baby underwent lobectomy and her postsurgical period was uneventful. After the surgery, baby is doing well for last 6 months without any major respiratory symptoms. Now she is developmentally age appropriate having normal growth. Presently, at the age of 1 year, her weight is 9.6 kg, length 75cm, W/H on 50th centile and L/A on 75th centile, OFC 45 cm that falls on 50th centile.

Pediatric Flexible Airway Endoscopy: An Experience of 82 Cases

ARM Luthful Kabir, Nazmul Haque, M Ruhul Amin

XIV Biennial Conference BPA and Indo Bangla Ped. Meet
20-22 December, 2002, Dhaka

Introduction: Although the availability of flexible fiberoptic bronchoscopy (FFB) has been a major advance in adult pulmonary medicine, the role of FFB in children has not yet been explored in our country. It remains at present an indispensable technique in pediatric pulmonology in developed countries.

Objective: To analyze the contribution of FFB to the management of respiratory diseases in children.

Methods: Eighty-two such procedures were performed at the ICMH between July 2001 to November 2002 on children under 15 years old. We used Pentax FB-10 fiberoptic bronchoscope, after providing conscious sedation with midazolam accompanied by IV fluid, atropine and 2% xylocaine. The child was monitored by pulse oxymeter and supported by continuous oxygen flow to guard oxygen saturation level. No intubation was required in our cases. In all cases the insertion of the tube was through nasal.

Results: Eighty two children were subjected to respiratory endoscopy, 49 (60%) being male and 33 (40%) female. There were 58 cases of bronchoscopy and 24 cases of laryngoscopy. The age range of children who underwent bronchoscopy were 7 months to 15 years with 29% below 3 years, 48% between 3-10 years and 22% more than 10 years. The diseases for which bronchoscopy were pulmonary TB (29.3%), persistent consolidation (22.4%), asthma (12.0%), bronchiectesis (10.3%), infantile wheeze (6.8%), chronic cough (5.1 %), atelectesis (3.4%) and others (10.3%). The diagnosis was substantiated by bronchoscopy in 31.5% cases. The isolation of organism from bronchoalveolar lavage (BAL) was only 12.5%. The vocal cord could not be negotiated in 7 (12%) cases because of excessive fighting on the part of the child (43%) and nasal bleeding (43%). The age range of laryngoscopy cases were 19 days to 13 years with 58% one year or below and 42% above one year. The commonest indication of laryngoscopy was stridor (66.6%) followed by hoarse voice (20.8%) and noisy respiration (12.5%). No important complications occurred but there was slight decrease in oxygen saturation.

Conclusion: The indications of FEB were pulmonary TB, persistant consolidation, asthma, bronchiectasis, infantile wheeze, chronic cough and atelectasis. The indications of laryngoscopy were chronic stridor, horarse voice and noisy respiration. The vocal cord could not be negotiated because of excessive fighting on the part of the child and nasal bleeding.

Flexible Fiberoptic Bronchoscopy In Children: Performance of 105 Cases

ARM Luthful Kabir, Nazmul Haque, Ruhul Amin

7th Workshop on Asthma and COPD
6-7 May 2003, Dhaka

Introduction: Although the availability of flexible fiberoptic bronchoscopy (FFB) has been a major advance in adult pulmonary medicine, the role of FFB in children has not yet been explored in our country. It remains at present an indispensable technique in pediatric pulmonology in developed countries.

Objective: To analyze the contribution of FFB to the management of respiratory diseases in children.

Patients and methods: One hundred and five such procedures were performed at the ICMH between July 2001 to March 2003 on children under 15 years-old. We used Pentax FB-10 fiberoptic bronchoscope, after providing conscious sedation with midazolam accompanied by IV fluid, atropine and 2% xlocaine. No intubation was required in our cases. In all cases the insertion of the tube was through nasal.

Results: Out of 105 children who were subjected to respiratory endoscopy, 68 (65%) were male and 37(35%) female. There were 75 cases of bronchoscopy and 30 cases of laryngoscopy. The age range of children who underwent bronchoscopy were 7 months to 15 years with 28% below 3 years, 53% between 3-10 years and 19% more than 10 years. The indications of bronchoscopy were persistent consolidation (27%), suspected pulmonary TB (21%), asthma (12%), bronchiectesis (9%), infantile wheeze (8%), atelectesis (8%), chronic cough (5%) and others (10.3%). The age range of laryngoscopy cases were 19 days to 13 years with 67% 1 year and below and 33% above 1 year. The commonest indication for fiberoptic laryngoscopy (FOL) was stridor (70%) followed by noisy respiration (17%), and hoarse voice (13%) The vocal cord could not be negotiated in 7 (9%) cases because of excessive fighting on the part of the child (43%) and nasal bleeding (43%). No important complications occurred but there was slight decrease in oxygen saturation.

Conclusion: FEB was performed in 75 cases and FOL in 30 cases. The indicates of FEB were persistent consolidation, suspected PTB, asthma, bronchiectasis, infantile wheeze and atelectasis. The indications of FOL were stridor, noisy respiration and hoarse voice.

Pediatrician's Daily Bread and Butter in The Private Chamber

ARM Luthful Kabir, Ahsanullah Al Baki

1st Paediatric Conference BPA Sylhet Brahch
25-27 August 2006

Background: We know the disease profile of pediatric patients in the community, hospital out patient department and inpatient department. We know little about the disease profile of children attending the private chamber of a pediatrician.

Objectives: The study was conducted to look into the disease profile of sick children who attended the private chamber of a pediatrician.

Methodology: The study was conducted in a private chamber of one of the authors during fourteen. A total 6082 children included 442 neonates attended the chamber. Each and every case was documented throughout the period and the diagnosis was made mostly clinically by taking detailed history and relevant physical examination.

Results: More male children (57.3%) attended than the female children (42.7%). The mean and median age of children were 40 months and 27 months respectively. In the non-neonatal group the top ten causes for attending the chamber were diarrhoea (10.8%), RAD-reactive airway disease (10.5%), viral fever (9.0%), bronchitis (8.9%), bronchiolitis (3.5%), enteric fever (3.4%), helminthiasis (2.7%), poor feeding 2.4%, RAP-recurrent abdominal pain (2.0%) and sore throat 1.9%. Other ten important causes were recurrent fever, cough and cold, urinary tract infection, hepatitis, pneumonia, growing pain, constipation, vomiting, stomatitis and headache. In the neonatal group the top five causes of problems were infantile colic (27.1%), neonatal jaundice (17.4%), 'breast milk diarrhea' (4.7%), omphalitis (3.8%) and sticky eyes (3.1%).

Conclusion: Respiratory disease (27.5%), high febrile illness (17.0), diarrhoea (10.8%) and various pain disorders (3.4%) were the main health problems of non-neonatal children for attending the private chamber of a pediatrician. 'Poor feeding in otherwise healthy children" reflects 'undue and over conscious attitude' on the part of the parents for having fewer number of children. Infantile colic is the single most important cause of consultation with pediatrician in the neonates.

Foreign Body Aspiration in Children-Experiences at The Institute of Child and Mother Health (ICMH), Dhaka

ARM Luthful Kabir, Jasim Uddin Majumder

1st Paediatric Conference Sylhet BPA Branch
25-27 Auguast 2006, Sylhet

Background: Foreign body (FB) aspiration is a major cause of morbidity and mortality in children. It is sometimes a life-threatening emergency. It is the second leading cause of accidental death at home among children below 5 years of age. The practicing doctors of Bangladesh are not much aware about the situation while doing clinical practice.

Objectives: This presentation deals with various modes of presentations, consequences and outcome following FB aspiration in children.

Results: The study was conducted during the period of 1999 to 2005 in children who attended ICMH with a history of FB aspiration or hospitalised with the consequences following FB aspiration which was found out after taking detailed history.

One group presented with typical coughing and choking while playing or eating and the other group presented with the consequences like asthma like symptoms, recurrent pneumonia, atelectesis and brochiectasis. Investigations required were X-ray chest-frontal and lateral projections, fluoroscopy, CT scan of chest and fiberoptic brochoscopy. Obstructive emphysema in chest radiology was found to be the hallmark for the diagnosis of non radio-opaque FB aspiration. Rigid bronchoscopy by a thoracic surgeon was the gold standard for the removal of FB in acute cases. Lobectomy was done in advanced cases of brochiectasis. Spontaneous removal of FB was also seen in few lucky cases. Two children died during the management.

Conclusions: High index of suspicion is necessary to diagnose FB aspiration in children. Chest x-ray should be studied meticulously for obstructive emphysema in suspected cases of FB aspiration. Rigid bronchoscopy is the most important modality of management in acute cases.

Bilateral Bronchiectasis and Cystic Fibrosis in Children: An Experience at The Institute of Child and Mother Health (ICMH), Dhaka

ARM Luthful Kabir

3rd National Conference BPPF
November 20, 2007, BCFCC, Dhaka

Background: Bronchiectasis is not an uncommon long standing lung disease in children. It can be unilateral and bilateral. Important causes of unilateral bronchiectasis are post pneumonic, asthma and foreign body aspiration. We need to know the clinical profile and etiology of bilateral bronchiectasis.

Objectives: Clinical profile and etiology of bilateral bronchiectasis were evaluated in 27 cases at the Institute of Child and Mother Health (ICMH) during the period of 2001 to 2006. Detailed history was taken and thorough physical examination was done. Necessary investigations like CBC, serum IgE, CXR (frontal and lateral views), x-ray PNS, CT scan of lungs, spirometry, fiberoptic bronchoscopy, sweat test, saccharine test etc. were done. All the findings were recorded in a structured questionnaire.

Results: There were 15 (55%) of male and 12 (45%) female. The mean age of children was 125 mo with the range of 6 years to 18 years. The mean age of onset was 44.2 months. Forty percent children had onset of symptoms in infancy and 80% children had onset by five years of age. History revealed previous history of pneumonia in 16 (59.2%), bronchiolitis in 7 (26%) and measles in 5 (18.5%) cases. History of consanguinity between the parents was found in 7 (26%) cases. The presenting features were cough 27 (100%), fever 22 (81.4%), productive sputum 20 (74%), respiratory distress 17 (62.9%), malodorous breath 15 (55.5%), chest pain 14 (51.8%) and hemoptysis in 7 (25.9%) cases.

The most important physical findings were finger clubbing 16 (59.2%), diminished chest movement 12 (44.4%), dull on percussion 10 (37%), diminished breath sound 13 (48.1%), crepitation 14 (51.8%) and rhonchi 10 (37.0%) cases. All the children had bilateral bronchiectasis on chest radiology and CT scan. Bronchiectatic changes were mostly observed in lower lobes; right 55.5%, left 40.7% followed by lingular (37.0%) and right middle lobe (25.9%). Honeycombing was found only in 2 cases only. Spirometry showed restrictive pattern of findings. Sweat chloride (done by conventional method) was found high in 8 cases. Cystic fibrosis was established in 8 (29.6%) cases, doubtful in another 8 (29.6%) cases and non-CF bilateral cystic fibrosis in 10 (37%) cases and one had Kartegener's syndrome. Four patient (14.8%) expired during the study period.

Conclusion: Though the mean age of children with bronchiectasis was found higher (125 mo) but the mean age of onset was before five years and even earlier in case of cystic fibrosis. The important features were cough, fever, productive sputum, respiratory distress, malodorous breath, chest pain and finger clubbing. Diarrhoea is not a common accompaniment in cystic fibrosis in our situation. Bilateral lower lobe bronchiectasis was the most common radiological findings.

Clinical Profile of Laryngomalacia in Children- An Experience of 51 Cases

ARM Luthful Kabir, Jasim Uddin Majumder, Wahida Khanam

3rd National Conference of BPPF
20, November 2007, BCFCC, Dhaka

Background: Laryngomalacia is the most common cause of congenital laryngeal problem. We have little experience of clinical profile of laryngomalacia in our situation.

Objectives: To look into the clinical profile of laryngomalacia in children presented in the hospital.

Methodology: Infants who presented with stridor and were otherwise healthy (clinical diagnosis laryngomalacia) were evaluated. Detailed history was taken, thorough physical examination was done and investigations of chest radiology and direct laryngoscopy with flexible fiberoptic bronchoscope were performed. The documentation were maintained in a structured questionnaire sheet.

Results: There were 51 infants and young children of which 41 (80.4%) male and 10 (19.6%) female, mean age being 93.5 days (±101.26) with the range of 19 days to 18 months. The onset of symptoms was within 7 days of birth in 45.1% cases, within first month after 7 days in 33.3% cases and in 21.6% cases after first month of age. Previous diagnoses made by the attending doctors were ARI/ pneumonia in 47% cases, others 27.4% cases (including 'no diagnosis 17.6%) and laryngomalacia in only 11.7% cases. Most of the cases 32 (62.7%) were treated with antibiotics including ceftriaxone in 23.5% cases. The presenting features were noisy respiration (98%), respiratory distress (94.1%), cough (64.7%) and feeding difficulty (51%). The children also had apnea (9.8%) and cyanosis (9.8%). The aggravating factors were night time (60.7%), crying (52.9%) and during feeding (50.9%). Stridor was mostly inspiratory in 92.2% cases and both inspiratory and expiratory in only 7.8% cases. Other physical features included chest indrawing (86.3%), sternal recession (68.6%), tachypnea (RR≥ 50/min) in 45.1% cases. Chest radiology was normal in 41.3% cases but had other features like enlarged thymus (20.2%), hyperinflation (13.0%), opacities (10.0%) and enlarged heart shadow (6.5%).

Laryngoscopic findings were medial collapse of arytenoid cartilage (75.7%), medial collapse of arytenoid cartilage and aryepiglottic folds (57.5%) and inferior curling of epiglottis along with medial collapse of arytenoid cartilage and medial collapse of aryepiglottic folds (24.2%) and pharyngeal collapse (12.1%). Laryngoscopy was normal in 15.5% cases.

Conclusion: Otherwise healthy infants presenting with stridor are most likely to be suffering from laryngomalacia. Male are predominantly affected. Doctors were confusing the diagnosis with ARI/pneumonia. The presenting features were noisy respiration, respiratory distress, cough and feeding difficulty. Stridor was mostly inspiratory. Important physical findings were chest recession and sternal recession. Laryngoscopic findings included medial collapse of arytenoids cartilage, medial collapse of aryepiglottic folds and inferior curling of epiglottis.

Prevalence of Snoring And Symptoms of Sleep-Disordered Breathing In Primary School Children in Dhaka City

Ashrafuddin Ahmed, Abid Hossain Mollah, A**RM Lutful Kabir,** Shakil Ahmed, Ridwanul Islam, Mustafizur Rahman

3rd National Conference of BPPF
20, November 2007, BCFCC, Dhaka

Background: Snoring during sleep may bring deleterious effects to children with underlying respiratory abnormalities, and an important manifestation of obstructive sleep apnea syndrome (OSAS). It results from obstruction of upper airway and may be associated with the diurnal symptoms. There are 4 to 5 core of children up to primary school level in our country and the pick incidence of sleep disordered breathing with in this age group. So, this study may uncover the high prevalence of snoring which consistently associated with significant morbidity.

Objective: To determine the prevalence of snoring in primary school children in Kotwali thana of Dhaka city and to evaluate the diurnal symptoms and conditions that may be associated with sleep disordered breathing.

Methodology: This is a cross-sectional study conducted among primary school children of Dhaka City. Thana was selected by random lottery Method. Data was collected by pre-tested structured questionnaire. Analysis was done in Epinfo programme. Both boys and girls were enrolled in the study.

Results: Among the total 6888 students, 2539 students were included in the study, 1145 were boys and 1394 were girls. The mean age of boys was 8.6 ± 2.3 yrs and that of girls was 8.7 ± 2.2 yrs and boys and girls ratio was 5:6. The prevalence of snoring was 4.7%. The highest percentage of snored student was 81.7% in 5 – 10 yrs group and rest 18.3% was in 11-15 yrs group. Snorers had significantly more night time symptoms such as mruxism 39.2/21.0 (P< 0.001), difficulty in breathing during sleep 23.3/6.4 (P< 0.001), mouth breathing during sleep 50.0/37.2 (P< 0.005), sweating during sleep 62.5/52.9 (P< 0.039), shaking the child during sleep 21.7/5.1 (P< 0.001), nocturnal enuresis 28.3/19.8 (P< 0.022) compared to non-snorers group.

Similarly snorers also had increased prevalence of day-time symptoms then their non-snorers counterpart particularly with morning headache 42.5/29.2 (P< 0.002), fallen asleep during a lesson 14.2/5.0 (P< 0.001), fallen asleep in running vehicle 57.5/44.9 (P< 0.007) compared to non-snorers group. Exposure to cigarette smoke at home, tonsillitis diagnosed by doctors, sore throat, poor hearing, snoring in 1st degree family members were identified as risk factor for snoring.

Conclusion: Snoring is a significant problem (5%) for children mostly in the age group of 5-10 years. Night symptoms are bruxism, breathing difficulty, mouth breathing, sweating and shaking the child during sleep and nocturnal enuresis. Day time associated symptoms are morning headach, falling asleep during a lesson and in a running vehicle.

Cystic Fibrosis (CF) IN Children - Lesson Learnt

ARM Luthful Kabir, Rahat Bin Habib, Md. Jashim Uddin Mazumder, Nazmul Haque, Md. Abid Hossain Mollah, Md. Ruhul Amin

4th Child Pulmocon
21, November, 2015, KIB, Dhaka

Background: It was thought that CF to be extremely rare in children of Bangladesh. There had been few cases reports of CF in paediatric journals of Bangladesh during last three decades. We are sharing our experience of 50 cases of CF in children.

Objective: To evaluate the clinical profile of CF in children.

Methodology: This is the clinical experience of our respiratory group during the decade of 2001 to 2015. Children who had persistent cough, or productive sputum, or persistent/ recurrent pneumonia and bronchiectasis on chest radiology and imaging were subjected to sweat chloride test. The level of sweat chloride was >60 mmol/L taken significant for the diagnostic purpose in every case. The sweat was collected by unconventional bag method (wrapping the whole body with polythine and blanket excluding the face). Then sweat was analyzed by electrolyte autoanalyzer.

Results: There was 26 (52%) male and 24 (48%) female with infant 1(2%), 1-5 years 10 (20%), 6-10 years 24 (48%) and 11-18 years 16 (32%). The mean age of children was 95.25 ±47.0 months with the range from 11-216 months. The mean age of onset was 28.0 ±27.37 months. There were 46 (92%) Muslim and 4 (08%) Hindu children. Onset of symptoms in infancy was observed in 32 (64%), 1-5 year 13 (26%), >5 year 5 (10%) cases. History revealed previous history of pneumonia in 36(72%), bronchiolitis 22(44%), and asthma in 8 (16%) cases. History of consanguinity between the parents was found in 13 (26%). There were 3 pairs of sibs among all the children. The presenting features were cough 50 (100%), fever 28 (56%), purulent sputum 35 (70%), recurrent or persistent pneumonia 36 (72%), malodorous breath 27 (54%), chest pain 11 (22%) and hemoptysis 6 (12%). Pulmonary TB was suspected and Anti TB treatment was given to 11 (22%) cases.

The most important physical findings were finger clubbing 35 (70%), diminished chest movement 28 (56%), dull on percussion 22 (44%), diminished breath sound 22 (44%), crepitation 37(74%) and rhonchi 16 (32%). Most of the children (83%) had bronchiectasis on chest radiography and /or chest CT scan. There was bilateral bronchiectasis in 31(62%) cases and unilateral bronchiectasis 6 (12%). Other radiological features were hyperinflation 21 (42%), inhomogenous opacity 27 (54%) and collapse consolidation 4 (8%) Honeycombing was found in 8 (16%) cases. Sweat chloride was found significant in 100% cases, range was 60-196 mmol/L, with mean being 106.0 ±37.04 mmol/L. Fecal fat was found significant in 6 (12%) cases. All the under 5 children had FTT and 31 (62%) older children showed evidence of poor weight gain. Pseudomonus in sputum culture was found in 4 cases (8%).

Conclusion: CF is far more common in our children than previously thought. The mean age of diagnosis is much delayed at 8.2 years. Many cases are misdiagnosed as pulmonary TB. The clinical features of CF include persistent cough, productive sputum, persistent or recurrent pneumonia, poor weight gain and bronchiectasis on chest radiology.

Cystic Fibrosis (CF) in Children of Bangladesh: An Experience with 71 Cases

ARM Luthful Kabir, Rahat Bin Habib, Nazmul Haque, Md. Abid Hossain Mollah, Jasim Uddin Majumder, Md. Ruhul Amin

Paediatric Gastroenterology Conference
19 March, 2016, BSMMU, Dhaka

Background: Cystic fibrosis (CF) is the most common life limiting recessive genetic disorder in Caucasians with an incidence of approximately 1 in 2500 children born in the United Kingdom. It is less common in African Americans (1 in 15000) and in Asian Americans (1:31000). It also affects other ethnic groups such as black population with an incidence of 1 in 17,000 and the native American population with an approximate incidence of 1 in 80,000.

Cystic fibrosis was thought to be extremely rare in Bangladesh. However, published reports, reviews and comments indicate that CF is probably far more common in people of Bangladeshi origin than previously thought but is under diagnosed or missed in the majority of cases. The precise incidence of CF among Bangladeshis is unknown. The incidence in migrant Indian populations in the USA has been estimated to be 1 in 40000, and in the UK between 1 in 10000 to 12000. As a result of the widespread belief that CF does not occur in Indo-Bangladesh subcontinent, the disease is rarely suspected and even if it is suspected the diagnosis is rarely confirmed due to the poor availability of facilities for diagnosis. The mean age of diagnosis among in Bangladeshi children is 89 months compared with Indian Americans 12 months and 6 months among Caucasian American children and reflects a very low index of suspicion for the disease even among Bangladeshi children. These reports suggest that the diagnosis of CF is much delayed in Bangladeshi children which may result in failure to thrive / severe malnutrition by the time the condition is eventually diagnosed — one of the bad prognostic indicators for survival.

Objective: To evaluate the clinical profile of CF in children of Bangladesh.

Methodology: This is the clinical experience of our respiratory group during the decade of 2001 to 2016. Children who had persistent cough, or productive sputum, or persistent/ recurrent pneumonia and bronchiectasis on chest radiology and imaging were subjected to sweat chloride test. The level of sweat chloride was ≥60 mmol/L taken significant for the diagnostic purpose in every case. The sweat was collected by unconventional bag method (wrapping the whole body with polythine and blanket excluding the face after washing with plain water. Then sweat was analyzed by electrolyte autoanalyzer. This is the analysis of 71 cases of cystic fibrosis.

Results: There was 35 (49%) male and 36 (51%) female with infant 4(5.6%), 1-5 years 18 (25.3%), 6-10 years 35 (49.2%) and 11-18 years 14 (19.7%). The mean age of children was 89 ±48.0 months with the range from 7-216 months. The mean age of onset was 16±25 months. There were 63 (89%) Muslim and 8 (11%) Hindu children. Onset of symptoms in infancy

was observed in 51 (72%), 1-5 year 17 (24%), >5 year 3 (4%) cases. History revealed previous history of pneumonia in 55(82%), bronchiolitis 41(61%), and asthma in 8(12%) cases. History of consanguinity between the parents was found in 17(24%). The presenting features were cough 68 (100%), fever 55 (82%), purulent sputum 50(75%), recurrent or persistent pneumonia 55(82%), malodorous breath 42 (63%), chest pain 14(21%) and hemoptysis 8 (12%). Pulmonary TB was suspected and Anti TB treatment was given to 11 (16%) cases.

The most important physical findings were finger clubbing 53 (75%), diminished chest movement 30 (42%), dull on percussion 28 (39%), diminished breath sound 24 (34%), crepitation 58 (82%) and rhonchi 34 (48%). Most of the children (83%) had bronchiectasis on chest radiography and /or chest CT scan. There were bilateral bronchiectasis in 62 (87%) cases and unilateral bronchiectasis 6 (9%). Other radiological features were hyperinflation 21 (37%), inhomogenous opacity 27(41%) and collapse consolidation 4(6%).Honeycombing was found in 8(11%) cases. Sweat chloride was found significant in 100% cases, range was 60-300 mmol/L, with mean being 122 ±55 mmol/L. Fecal fat was found significant in 11 (15%) cases. All the under 5 children had FTT and 31 (46%) older children (total 70%) showed evidence of poor weight gain. Pseudomonus in sputum culture was found in 4 cases (6%).

Conclusion: CF is far more common in our children than previously thought. The mean age of diagnosis is much delayed at 8.2 years. Many cases are misdiagnosed as pulmonary TB. The clinical features of CF include persistent cough, productive sputum, persistent or recurrent pneumonia, poor weight gain and bronchiectasis on chest radiology.

Recommendation: Pilocarpineiontophoretic test should be brought into practice for the diagnosis of CF in our country. Pediatric respiratory care facilities should be developed to serve respiratory cases.

Etiology and Clinical Profile of Recurrent and Persistent pneumonia in Tertiary Level Hospitals of Dhaka City

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5th Child Pulmocon, BPPF
1-2 December, 2017, BSMMU, Dhaka

Introduction : A small subset of children develop recurrent and persistent pneumonia, which is one of the most common reasons for referral to the paediatrician and continues to be a major challenge. There are limited data on the underlying causes predisposing to persistence or recurrence of pneumonia in children. To the best of our knowledge only few reports were published regarding this problem in our country as well as in developing countries.

Objectives: This study was conducted to find out the etiology and clinical profile of recurrent and persistent pneumonia in tertiary level hospitals in the Dhaka city of Bangladesh.

Materials and methods: This was a descriptive cross sectional study conducted in the admitted recurrent and persistent pneumonia patient in Sir Salimmullah Medical College and Mitford Hospital (SSMC & MH), Dhaka Medical College Hospital (DMCH) and Dhaka Shishu (Children) Hospital (DSH) during June 2015 to May 2016 after fulfilling inclusion criteria. Recurrent pneumonia is defined as 2 or more episodes of pneumonia in a single year or 3 or more episodes ever, with radiographic clearing between occurrences. Persistent pneumonia is defined as features of lower respiratory tract infection (i.e., cough, tachypnea and fever with or without chest retractions) with radiological evidence of infiltrates or consolidation in the lungs persisting for 30 days or more, despite receiving antibiotics for a minimum period of 10 days. Initially, 105 cases of recurrent and persistent pneumonia admitted patients were enrolled but finally 100 recurrent and persistent pneumonia patients were analyzed after completing required investigation. The patients were enrolled in the study after admission and explaining the parents / attendant about this study. During the period of study, data were collected through face to face interview for taking history, doing physical examination and relevant investigation and or telecommunication for collecting data as regards pending investigations. Investigation for the patients was sent gradually step by step in favor of history, clinical examination and radiological finding. At first CXR then complete blood count and peripheral blood film, TB screening, CRP, Blood for C/S, USG of chest, in suspected cases HRCT, bronchoscope, contrast x-ray of esophagus with T-position, stool for fecal fat, sweat chloride test, serum IgG, IgA, IgM ievel, T-cell , B- cell marker, color doppler echocardiography, pleural fluid study, X-ray PNS O/M view and saccharine test. The previous investigation reports and chest x-ray were recorded and compared to reach a diagnosis or assess the prognosis. For reaching a final diagnosis expert opinion was

always taken from chief of the unit or department or from seniors. After diagnosis and treatment child often came for follow up.

Results: This was a multi center study, among 100 cases 47 (47%) cases were taken from DSH, 43 (43%) cases were taken from SSMC & MH and 10 (10%) were taken from DMCH. Out of 100 cases 76 (76%) were recurrent pneumonia and 24 (24%) were persistent pneumonia. Among 100 cases of recurrent/ persistent pneumonia 66 (66 %) were male and 34 (34%) female. The age range from 2 month to 14 years with mean age group of this study was 3.92 ± 3.75 years. Forty four (44%) children were completely immunized. Among 100 patient 64 cases (64%) were exposed to smoke like household smoke during cooking or exposed to cigarette smoking. Twenty one percent cases received anti-tubercular therapy (ATT), before enrollment of this study, though tubercular case were 9 in this study. Among 100 cases, etiology of recurrent and persistent pneumonia could be determined in 83 cases, the most important causes were aspiration (19%) followed by cystic fibrosis (16%), pulmonary tuberculosis (9%), congenital heart disease (7%) and foreign body aspiration (6%). Less common causes were immunodeficiency, cerebral palsy, spinal muscular atrophy, Down syndrome, bronchopulmonary dysplasia, BOOP, bronchial asthma.

Conclusion: Etiology of recurrent and persistent pneumonia is identifiable in majority of cases (83%). Most common causes of recurrent pneumonia in tertiary level hospitals in Dhaka city are: recurrent aspiration, cystic fibrosis, pulmonary tuberculosis, congenital heart disease and foreign body aspiration.

Persistent or Recurrent Pulmonary manifestations and primary immunodeficiencies in hospitalized children

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5th Child Pulmocon, BPPF
1-2 December, 2017, BSMMU, Dhaka

Background: Primary immunodeficiency diseases (PIDs) are a genetically heterogeneous group of disorders that affect distinct components of the innate and adaptive immune system. Primary antibody deficiency is the most common disorder among PIDs. Recurrent pulmonary infection and chronic lung changes often lead to mortality and morbidity. An estimated prevalence of PID is 1:10,000 live births. PIDs are always underdiagnosed and underreported from the developing world.

Objective: The objective was to find out the pattern of primary immunodeficiencies in the children hospitalized with persistent or recurrent pulmonary manifestations (recurrent or persistent wheeze or pneumonia).

Methods: This observational study was conducted in the Department of Pediatrics, Ad-Din Women's Medical College & Hospital, during the period of May - October 2017. A total of 29 children ages ranging from 0-18 years, who presented with recurrent or persistent wheeze or pneumonia were enrolled. Children who were taking immunosuppressive drugs or suffering from diseases causing immunosuppression were excluded. Each case was evaluated through detailed history, thorough physical examination and investigations like CBC with PBF, CRP, Blood C/S, PID panel (serum IgG, IgA, IgM,IgE level, lymphocyte subset analysis), contrast X-ray of esophagus in T position, MT, Gene Xpert, ECHO, sweat chloride, iron profile on the basis of clinical features and whenever indicated.

Results: Among 29 cases, 13 were diagnosed having PIDs. There were 9(69.2%) male and 4 (30.8%) female with M: F ratio 2.25:1. The age of patients ranged from 2 months to 8 years & the mean age was 18.3 months. Age of onset of symptoms was in neonate 4 (30.8%), in 2-6 months 7 (53.8%),in 7-12 months 2(12.4%) cases. Mean age of onset of symptoms was 3.5 months. Parents of three patients (23.1%) were consanguineous. Most common presenting features were cough in 13(100%) followed by wheezing in 9 (69.2%), fever in 8 (61.5%) and respiratory distress in 7(53.8%), rhonchi in 11(84.6%) and crackles in 7(53.8%) cases. Nine (69.7%) children had failure to thrive. There were 8(62.5%) cases of infantile wheeze, 2(15.4%) cases of persistent pneumonia, 2 (15.4%) cases of recurrent pneumonia and 1(7.7%) case of reactive airway disease.

There was leukocytosis in 4 (30.8%), high lymphocyte in 7 (53.8%), persistent low lymphocyte count in one (7.7%) case with NK cell deficiency. Anaemia (Hb % < 11g/dl) was found in 7 (53.8%) cases.

Selective IgA deficiency was in 3 (23.1%) cases and isolated IgG deficiency was in 1 (7.7%) case. Combined IgG and IgA deficiency was found in 5(38.3%) cases followed by

combined IgG, IgM, IgA deficiency in 2 (15.4%) and combined IgM and IgA in 1(7.7%) case. High S. IgE was noted in 3 (23.1%) & one patient was diagnosed as NK cell deficiency. Iron deficiency anaemia in 3 (23.1%), Gastro esophageal reflux disease in 4 (30.8%) and cystic fibrosis in 1 (7.7%) cases were present in association with primary immunodeficiency. Among 8 cases of infantile wheeze combined IgG, IgM, IgA deficiency was present in 1 (7.7%) case, combined IgG, IgA deficiency in 4(30.8%) , selective IgA deficiency in 1 (7.7%) case and IgA deficiency in association with cystic fibrosis in 1 (7.7%) case. IgG deficiency with GERD was found in 1 (7.7%) case. One (7.7%) case of persistent pneumonia had IgG, IgA deficiency and another case (7.7%) had selective IgA deficiency. NK cell deficiency and combined IgM, IgA deficiency were present in one case (7.7%) each presented with recurrent pneumonia. Panhypogammaglobulinemia with bicytopenia was found in 1 (7.7%) case of reactive airway disease.

Conclusion: Primary antibody deficiencies were the most common disorders among our patients. Considering this result, cases with unusual, recurrent / persistent wheeze or pneumonia should be evaluated for primary immunodeficiency disorders

Cystic fibrosis (CF) in children of Bangladesh: An Experience of 16 years

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5th Child Pulmocon, BPPF
1-2 December, 2017, BSMMU, Dhaka

Background: Cystic fibrosis (CF) is the most common life limiting genetic disorder in Caucasians with an incidence of approximately 1 in 2500 children born in the United Kingdom. Cystic fibrosis is thought to be extremely rare in Bangladesh.

Objective: To evaluate the clinical profile of CF in children of Bangladesh.

Methodology: This is the clinical experience of our respiratory group during more than a decade and a half from 2001 to 2017. We evaluated 204 children (0-18 years) who presented with persistent cough or productive sputum or persistent / recurrent pneumonia and bronchiectasis/ persistent pulmonary infiltrate on chest radiology or HRCT scan of lungs. The level of sweat chloride was > 60 mmol/L taken significant for the diagnostic purpose in every case. The sweat was collected by unconventional wrapping method (wrapping the whole body with polythine and blanket excluding the face) after washing with plain water with the support of oxygen and pulse oxymeter for monitoring. At least 1 ml of sweat was required for analyzing by electrolyte autoanalyzer.

Results: There were 80 cases of CF, with 37 (46.3%) male and 43 (53.8%) female with infant 3 (3.7%), 1-5 years 15 (18.7%), 6-10 years 42 (52.5%) and 11-18 years 20 (25%). The mean age of children was 91.86 (SD 49.73) months with the range from 7-216 months. The mean age of onset was 15.10 months. There were 73 (91.3%) Muslim and 7 (8.8%) Hindu children. Consanguinity between the parents was 19 (23.8%). Onset of symptoms in infancy was observed in 61 (76.3%), 1-5 year 16 (19.9%), >5 year 3 (3.8%) cases. Previous history of pneumonia 67(83.8%), bronchiolitis 52(65%), and asthma 13 (16.3%) were found. The presenting features were cough 68 (100%), fever 55 (82%), purulent sputum 60 (75%), recurrent or persistent pneumonia 60 (75%), and malodorous breath 50 (62.5%). Fifteen (18.8%) children received anti-tubercular treatment previously. Physical examination included FTT in 94.4% under 5 children and under nutrition in 93.5% cases of older children. Other features included finger clubbing 61 (76.3%), diminished chest movement 29 (36.3%), dull on percussion 28 (35%), diminished breath sound 23 (28.7%), crepitation 65 (81.3%) and rhonchi 42 (52.5%). Chest x-ray features were hyperinflation, peribronchial thiekening, ring shadows, cystic lesions, collapse consolidation and nodular densities in 53.8% cases and 'signet ring' sign, bronchial dilatation, airway thickening and atelectasis on high resolution computed tomography (HRCT) in 80.7% cases. Any evidence of bronchiectasis on chest radiography and /or chest CT scan was found in 72% cases and it was bilateral 87% cases and unilateral bronchiectasis 13% cases. The mean sweat chloride level was 121.25 (SD 53.72) with the range of 60-300 mmol/L. Fecal fat was high in 24 (30%) cases. Sputum culture revealed Pseudomonas in 13 (16.7%) cases. Seven (19%) children had evidence of sinusitis on paranasal sinuses (PNS). During the entire study period, 9 (11.1%) patients died.

Conclusion: CF is far more common in our children than previously thought. The mean age of diagnosis is much delayed at 7.5 years though the mean age of onset is very early (15 month). Many cases are misdiagnosed as pulmonary TB. The clinical features of CF include persistent cough, productive sputum, persistent or recurrent pneumonia, poor weight gain and bronchiectasis on chest radiology and imaging.

Sweat Test in Children with Chronic Sino-pulmonary Problems

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October, 2008
ICMH, Mauail, Dhaka

Objective: Sweat test was performed in 38 children (one month to 18 years) having chronic sino-pulmonary problems (recurrent pneumonia/ persistent pneumonia/ chronic cough with sputum production/ recurrent or persistent chest radiographic abnormalities like bronchiectasis, atelectasis, infiltrates, or hyperinflation and nasal polyps or radiological abnormalities of the paranasal sinuses.

Methodology: Sweat was collected by traditional method of wrapping the child with a polythene and chloride was estimated in an electrolyte analyzer. Sweat chloride level of ≥60 mEq/L was considered high and significant for the diagnosis of cystic fibrosis.

Results: There were 38 cases with chronic sino-pulmonary problems (excluding asthma), of which bilateral bronchiectasis was 21 (55%), recurrent / persistent wheeze 14 (37%) , and suspected interstitial lung disease 03 (08%). There was 24 (63%) male and 14 (37%) female cases. The mean age of bronchiectasis was 84.24 (± 62.12) months and that of recurrent/ persistent wheeze 41.57 (± 39.00) months. Sweat chloride was found raised (> 60 mmol/L) in 13 (34%) cases. Raised sweat chloride was found more in bilateral bronchiectasis cases (43%) as against (14%) recurrent/ persistent wheeze cases. Sweat chloride was also found raised in 2 cases of suspected interstitial lung disease cases. Cystic fibrosis is not very rare in our situation.

Conclusion: Sweat chlorid test should be routeinly performed in children presented in chronic sino pulmonary problem for the diagnosis of cystic firbosis. There is high possibility of cystic fibrosis in children having bileteral bronchiectasis.

04 Non Respiratory

Articles Published *Conference Presentation* *Disseration / Thesis* *Others*

Review Article *Bangladesh J. of Child Health. 1985, Vol. 9 (2) : 132-135*

Sclerema Neonatorum-A Review

ARM Luthful Kabir

Introduction

Sclerema neonatorum is a variety of subcutaneous adipose tissue derangements of the newborn. First, it was clearly defined by Hughes and Ham mond (1948) as an irregular, hard, non-tender, nonpitting skin lesions which appears to be bound down to the underlying muscles and bone and can not be pinched up. It usually appears on the buttocks and thighs and may spread to involve the whole body except for the soles, palms and genitalia. It occurs in the first few weeks of life in premature and debilitated neonates associated with septicaemia, respiratory tract infection, diarrhoeal disturbances and dehydration etc.

There are other clinical examples of subcutaneous fat derangements. Sclerema neonatorum should not be confused with subcutaneous fat necrosis and scleredema. These are separate entities affecting skin and subcutaneous fat of the neonates. Subcutaneous fat necrosis occurs in healthy infants and is believed to result from pressure. The lesion is a sharply circumscribed area of hardness and is attached to the skin though it moves freely over the muscles and bone. The process develops mainly over bony prominences on the back, buttocks, thigh, cheeks, shoulders and arms. It does not spread and disappears spontaneously over a period of months. It may become cystic and calcify. Scleredema has been regarded as an oede-matous form of sclerema3. It is an oedematous swelling occuring on the hands and feet and may spread from the feet to the calves, thighs and abdomen. It pits on pressure.

Histogenesis

The etiology of sclerema neonatorum is still mysterious. The subcutaneous fat of the new bora in comparison to adult subcutaneous fat, has greater amount of saturated fatty acids, lower amount of unsaturated fatty acids, a higher melting point and a lower solidification point. The alterations in the subcutaneous fat of a neonate with sclerema neonatorum represent an exaggeration of the normal new born pattern. Thus, the increased ratio of saturated to unsaturated fatty acids in the subcutaneous t riglycerides could be responsible for the physical changes of the subcutaneous fat in sclerema neonatorum.

The possible common factors which trigger off the whole process of development of sclerema appears to be shock brought on by an insufficiency of peripheral circulation owing to vasoconstriction. The circulatory collapse was assumed responsible for producing such a reduction of peripheral temperature as to lead to a solidification or chilling of the fat together, with thickening of the collagen fiberes. That peripheral circulatory failure may not alone account for the process is shown by the presence of sclerema in the internal adipose tissue in another study.

Histopathology

The thickening of the subcutaneous tissue is due to an increase in size of the fat cells and to the presence of intersecting fibrous bands. Many fat cells are filled with rosettes of fine needles like clefts. In frozen sections the clefts are found to be occupied by crystal of solidified triglycerides and in most instances there is no evidence of fat necrosis or inflammation as in subcutaneous fat necrosis. Still, in some cases one can see fat necrosis and inflammatory reactions with giant cell.

Biochemical Features

The biochemical features of sclerema are also interesting. Hughes and Hammond (1948) found elevated neutral fats in the subcutaneous tissues of children with sclerema neonatorum- Kelium I (1968) using the chromatographic method has confirmed that there is an elevation of saturated fatty acids as compared with unsaturated. Levin found electrolyte imbalance in his series. Blood urea and potassium were elevated, but $C0_2$ content was depressed.

Clinical Presentations

Sclerema neonatorum occurs in the first few weeks of life ranged from 2nd to 66th day, with an average of 14 days. The birth weight is usually low, deliveries are premature. The extent of involvement varies. The induration of the lesions appears first on the face or legs and in a short time may involve the entire body surface with the exception of palms, soles and genitalia. The skin is tightly shrunken, smooth tallow like and cold and can not be separated from the underlying structures. The tissues are stony to touch and are non-pitting. The joints are not flexible, the infant resembling a frozen cadaver in severe cases. The face may have the mask-like expression of pseudotrismus from the partial immobility of the joints at the angles of the jaw.

The associated conditions were best observed in a study carried out by Bwibo and Anderson.

There may be enteritis with dehydration and electrolyte imbalance, sepsis, respiratory distress syndrome, hypothermia with cyanotic attacks, pneumonia with jaundice, cold injury, hypoglycemia, multiple congenital anomalies including congenital acyanotic heart disease and protozoan infection with Pneumocystis carinii.

Diagnosis

Diagnosis is mostly clinical. In addition, investigations may be carried out which are directed towards the associated conditions. Apart from routine examinations, blood culture, blood urea, blood sugar, X-ray chest, serum electrolytes, serum bilirubin, $TC0_2$ and finally C3, Factor B, alpha-1-antitrypsin may be done.

Management

There is no specific treatment for sclerema neonatorum with the resultant of high mortality. Prognosis has been claimed to have improved with measures aimed at treating associated ailments of sclerema neonatorum, as for example with :

a) Correction of dehydration and electrolyte imbalance

b) antibiotics

c) steroids

d) simple transfusion with whole blood

e) exchange transfusion with fresh blood.

The use of antibiotics might influence the course of sclerema neonatorum. Full term infants with sclerema and cold injury showed improvement in significant number of cases with only antibiotics. Infants with associated sepsis deserve treatment with antibiotics according to the blood culture and sensitivity reports.

There is controversy as regards treatment of sclerema neonatorum with steroids. Successful treatment with steroids has been claimed by many authors. There are report on successful management of the premature infants with sclerema with steroids. On the other hand, there are reports suggesting that there is yet no certain evidence that steroids are of any value in the treatment of sclerema neonatorum.

Simple transfusion with fresh blood was first advocated by Davis (1971) with better prognostic outcome. It corrects associated anemia, provides polymorphonuclear leukocytes and serum opsonins. Indira Narayanan et al (1982) showed better results in cases treated with transfusion with whole blood in addition to antibiotics and steroids as compared to cases treated only with antibiotics and steroids.

The value of exchange transfusion in neonatal sepsis with sclerema was first reported in 1973. Subsequently, a few other studies have also shown beneficial results. One of the interesting features was the significant improvement in the general condition after the exchange transfusion. The beneficial effects have been related to several mechanisms. It has been suggested that the procedure may correct metabolic disturbances such as acidosis, control circulatory shock, remove bacteria and endotoxins, increase phagocytic activity and improve humoral and cellular defense mechanisms. Recent studies have also suggested that it increases the opsonic function.

Prognosis

Despite the recent development of knowledge in the field of sclerema neonatorum, the mortality is still high even in some more advanced centres ranging between 75-100. Efforts are to be continued for further study in this fatal form of neonatal illness.

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Suprapubic Aspiration of Urine in Infants

ARM Luthful Kabir, Manajjir Ali

The collection of a contamination free specimen of urine for diagnosis of urinary tract infection is most desired. There are number of methods available for obtaining urine for culture. There are proponents for all of them and thus all have their drawbacks. The clean bag collection has high incidence of contamination. Voided midstream requires a cooperative patient, which makes its use difficult with neonates and the mentally retarded. There is a definite risk of introducing infection with catheterisation.

Suprapubic aspiration of the bladder has proved to be a safe and rapid means for collection of urine from infants and children. It avoids contamination of the specimen and dispenses with the need for colony count because the isolation of any organism indicates bladder bacteriruria. In addition, urine collected in this way can be kept at 4°C or at room temperature upto 10 days before it is cultured. The method of obtaining a specimen of urine by suprapubic aspiration from the bladder was first reported by Guze and Beeson (1956). This technique was first described for infants by Pryles et al. (1959) and Pryles (1965).

Requirements

A disposable (2.5 to 10 cc) plastic syringe, a number 21 to 23 gauge 1.5 inch (3.8 cm) length needle, sterile swabs and suitable antiseptic solution like 0.5% chlorhexidine in 70% spirit or tincture of iodine.

Procedure

Strict attention to proper technique is necessary to prevent complication from suprapubic bladder aspiration. The newborn infants diaper should be dry for at least one hour to ensure that the bladder is distended with urine. In larger infants it may be possible to percuss or palpate the distended bladder. In case of obese child, the bladder may be bimanually palpated. If there is slight impairment of percussion note, nothing more should be done and should wait for an hour after which the percussion note will be dull usually. Suprapubic bladder aspiration cannot properly without an assistant to infant. In case of male infant, the assistant may pinches the penis to compress the urethra and in case of female, by sqeezing the labia at the first sight of voiding, will prevent emptying of bladder.

The physicians hands should be washed thoroughly. The suprapubic area should be prepared with antiseptic solution. The needle attached to a syringe is inserted approximately 2 to 2.5 cm above the symphysis pubis in the midline (there is often a skin crease in this location) with the syringe held in approximately perpendicular to the examining table or angled slightly (10 degree) toward the head, the needle is inserted for an inch (2.5 cm) or more.

In larger infants, a slight decrease in resistance may be felt when the bladder is entered. Minimal suction is applied to the barrel of the syringe and the urine is aspirated. If no urine is obtained, the needle should be withdrawn. Aimless probing or repeated attempts are not warranted. The needle is now discarded and and the syringe sealed with a sterile cap or second needle. The specimen is sent to the laboratory in the sealed syringe.

Failures

The most common causes of failure in performing a suprapubic tap are failing to wait until the bladder is full (dry diaper), inserting the needle too close to the pubis and inserting the needle angled toward the feet, rather than perpendicular to the table or angled slightly towards the head. As because the bladder is an abdominal organ in the newborn, if the needle is inserted too close to the pubis or is angled toward the feet, the bladder may frequently be missed.

Complications

The complications ranged from transient heamaturia to bowel perforation. Overall, the procedure carries a complication rate of approximately 0.2 percent and success rate of about 90 percent. Potential complications of suprapubic bladder aspiration are listed in table I.

Table-I

Complications of Suprapubic Bladder Aspiration in Infants and Neonates (Total Case - 4985)

Microscopic haematuria	Frequent
Gross haematuria	5
Suprapubic haematoma	1
Bowel perforation	5
Performation of abdominal organ	1
Death	1

Most complications of suprapubic bladder aspiration are thought to results from performing the procedure in the presence of contraindication. Probably, the most common mistake is using the technique in an infant with an empty bladder. To avoid this error, the bladder should be palpated and percussed prior to aspiration. However, in newborn infants, a full bladder may not be palpable, so the diaper must be dry for one to three hours before the procedure. Dehydration is also a contraindication to suprapubic bladder aspiration. Other major contraindication are listed in table II.

Table-II

Contraindication to suprapubic bladder aspiration in infants and neonates

Empty bladder
Dehydration
Abdominal distension
Organomegaly
Abdominal anomalies
Genitourinary anomalies
Haemorrhagic disorders

Original Article *Bangladesh J Child Health 1988; Vol 12 (1/2): 14-21*

Feeding Pattern, Sociodynamics, Clinical Spectrum and Recovery of Severely Malnourished Children-A Study by 155 Cases

M Q-K Talukder, **ARM Luthful Kabir,** C A Kawser

Objective: One hundred and fifty five severely malnourished children were studied retrospectively and prospectively for feeding pattern, sociodynamics, clinical spectrum and recovery.

Methodology: Diagnosis was made from history, anthropometry, clinical features and serum protein.

Results: There were 103(64.5%) cases of marasmus, 45 (29%) marasmic-kwashiorkor and 10 (6%) kwashiorkor. They were treated with full energy feeding from the beginning of management. The mortality was 4.5%. Daily weight gain was 50.7±27.3 g, 77.8 ± 46.3 g and 83.6 ± 48.0 g respectively in marasmus, marasmic-kwashiorkor and kwashiorkor patients. Most of the patients 152 (98%) were stunted and wasted signifying chronic malnutrition. Diarrhoea was found to be the commonest in 61 (39%) cases as associated illness. There was no immunisation of extended programme of immunisation schedule in 99% cases. Most of the parents (79%) were poor and illiterate (74% fathers and 93% mothers). 105 (68%) parents were using firewood, bagasse, papers etc. as fuel and 98 (63%) were using kuchcha latrine. There were migration history in 73% cases. Colostrum rejection was common in 79% cases.

Conclusion: The study concludes that PEM is common in poor socioeconomic and illiterate classes of people. Our children are the victims of chronic malnutrition. Immunization rate is alarmingly low in malanourished children. Colostrum rejection is common. Weaning practices are at fault. Mortality from PEM has reduced with proper and meticulous management.

Acute Anuric Renal Failure - A Challenge in Child Health

ARM Luthful Kabir

Acute Anuric Renal Failure (AARF) has become a great challenge in child health in Bangladesh. The disease first came into notice in 19781 with very high mortality. Children of all age groups are usually affected although the highest incidence falls between 2-5 years. It appears that the number of AARF cases is increasing every year as evident from the yearly admission data of the children ward of the Institute of Post Graduate Medicine Research (IPGMR), Dhaka: 10 (since Sept. 81), 210 (1982), 110(1983), 104 (1984), 167 (1985), 318 (1986), 477 (1987), 120 (upto Apr. 1988). The overall prognosis is uniformly fatal with all available resources and care. In one study it was 84% where 25 children were followed up, in another series with 92 children the mortality was 78% and in the biggest series with 275 children the mortality was 88%.

The children are mostly from lower socioeconomic group, referred from within Dhaka city and from other districts of the country. The presenting features are almost similar for all the children. Around five to seven days before admission, the children develop fever. They refuse usual feed at that time. Sometimes, there are diarrhoea and vomiting, often a history of one to two days of oliguria and finally complete anuria. History of recent measles is found in significant number of cases. All of the children receive drugs during the anuric phase mostly paracetamol, frusemide, ampicillin, cotrimoxazole, mannitol and also sometimes homeopathic medicine of unknown constituents. The parents do not give history of significant water loss as to account for the development of acute irreversible renal failure but there is history of vomiting in significant number of cases with complete refusal of feed. On admission into the hospital, the children are puffy with generalised edema and breathless but alert. There is marked hepatomegaly in almost all cases. By the time the children reach hospital, they are already anuric for about 3-7 days. Biochemical investigation confirm advanced renal failure with high blood urea, serum creatinine and occasionally serum potassium and very low plasma bicarbonate levels. Peritoneal dialysis (PD) is the only means of blood purification system available in this centre. PD brings about initial improvement in the biochemistry but later on children seem to deteriorate clinically during the procedure. They are unable to tolerate the dialysis required to control the uremia and fluid overload. They become weak and exhausted. Severe hypertension is uncontrollable as better antihypertensive drugs like hydralazine, diazoxide, sodium nitroprusside etc. are not available in the local market. Propranolol, prazosin and occasionally nifedipine can only be provided to the patients. Some suffer from irreversible cardiopulmonary failure and some develop signs of encephalopathy before they die.

The reviews on acute renal failure in childhood in other countries show very few children presenting with such a mysterious disease with prolonged anuria for treatment. It is well established that the causes of acute renal failure can be grouped into prerenal, intrinsic renal and postrenal. Careful history and thorough physical examination do not suggest significant fluid deprivation like diarrhoea, vomiting, septic shock, haemorrhage, burns etc. in our cases. Intrinsic renal causes like diseases primarily affecting glomeruli: acute post streptococcal glomerulonephritis, membrano proliferative glomerulonephritis,

rapidly progressive glomerulonephritis and systemic diseases involving kidney such as systemic lupus erythematosus, Henoch Schonlein purpura which can terminate into acute renal failure are also excluded clinically. Hemolytic uremic syndrome presently is a challenging problem of intrinsic renal failure. Acute renal failure due to rhabdomyolysis associated with Brucellosis and pneumococcal pneumonia have been reported. There are also reports of non-oliguric renal failure following burns, use of potent diuretic in oliguric patients. Many drugs are now established as causing acute renal failure. Aminoglycosides, non-steroidal antiinflammatory drugs, antibiotics like penicillin, ampicillin, methicillin, erythromycin are few examples. Post renal causes of acute renal failure can be excluded clinically outright.

These all above types of acute renal failure are in sharp contrast to our group of AARF following minor febrile illness of sudden onset from similar socioeconomic background. Viruses like measles can be implicated to cause AARF. It was found in 6% of cases in one study. But the pathogenesis remains unanswered. The pathology of kidney disease could not be ascertained as yet. Autopsy can not be done because of parents refusal. However, needle necropsy of kidney and liver immediately after death done in eleven cases showed kidney histology with no glomerular or tubular damage under light microscopy but all the liver tissues showed diffuse focal necrosis.

It is a matter of great hope that our government is informed of this dr.adful disease and recently Anna V Murphy a Paediatric Nephrologist from Glasgow visited our renal unit under WHO sponsorship to offer her experience in peritoneal dialysis and other aspects of managing acute renal failure. Intermittent peritoneal dialysis had be Ch in practice in our paediatric unit for treatment of acute renal failure in children as elsewhere. Dr Murphy emphasised on taking care of the strict balance of PD fluid. In the consequence the children remain conscious during and after the procedure, features of fluid overload reduces as evident by weight loss, regression of hepatomegaly. It is our experience that with round the clock intensive care mortality can be reduced significantly.

The extent of problem with AARF in children is enormous and its management is still more difficult with presently available investigation and other treatment facilities. The present paediatric unit of IPGM & R with only eight beds is quite inadequate to act as the lone referral centre for all children with renal failure in Bangladesh. Recently, recommendation has been made for a separate Paediatric nephrology unit with establishment of facilities for adequate investigation and research work. The proposal for which has already been submitted to the concerned authority. An epidemiological survey has also been proposed.

In conclusion this disease poses several questions. What is the exact etiopathogenesis of the illness? What should be the optimum management? Why there is so persistently high mortality ? And the questions remain unsolved even after half-a-decade. The present management of PD involves all concerned departments including the Govt, and the hospital staff especially trained doctors and nurses for financial and technical support. However, a concurrent drive for clinico-epidemiological research and improvement in dialysis facilities are considered inseparable for understanding the disease as well as optimizing the management of this epidemic of kidney failure in children in this country.

Bangladesh J. of Child Health 1989, Vol. 13 (1) : 64-66

Diabetes Insipidus due to Pituitary Tumour : A Case Report

ARM Luthful Kabir, M Q-K Talukder

Introduction

Diabetes insipidus (DI) is a metabolic disorder characterised by polyuria and polydipsia due to deficiency or ineffectiveness of antidiuretic hormone (ADH). There are four types: (a) Organic, (b) Nephrogenic, (c) Hereditary and (d) Idiopathic. Renal tubular reabsorption of water is regulated by ADH, Vasopressin, elaborated by the cells in the anterior nuclei of the hypothalamus, passed along the hypothalamo-hypophyseal nerve tract and stored in the posterior pituitary, so that these structures constitute a neurosecretory system for the production and storage of Vasopressin. Any lesion that causes damage to the neurosecretory system can give rise to organic type of DI. Common lesions are brain tumour, head trauma and encephalitis. Other causes like pyogenic meningitis, tuberculous meningitis, CNS leukemia, meningovascular syphilis, Hand-Schuller-Christian disease, sarcoidosis, actinomycosis, operative procedure near the pituitary or hypothalamus have also been reported. We report a case of organic DI due to brain tumour (pituitary), possibly craniopharyngioma.

Case Report :

Tushi, a 3.5 years old female child, daughter of a businessman, hailing from Khulna admitted into the children ward of the Institute of Post Graduate Medicine and Research, Dhaka on the 24th January 1987 with a constellation of symptoms polyuria, polydipsia, fever, headache, vomiting, sleep disturbance for the last 7 months. There was no history of convulsion or unconsciousness. Previously, she was seen by various doctors and treated with various drugs. She was developing normally and was immunised with all vaccine excepting that against measles. She was the only child of her healthy parents.

On physical examination she was found to have dry warm skin, raised temperature 101°F and mild dehydration. There was no significant lymphadenopathy. Blood pressure was 110/60 of mmofHg. Anthropometry showed body weight 10.3 kg (68% of 50th centile of NCHS standard), hight 88 cm (91%) and occipitofrontal circumference 47 cm just on 3rd centile. Fundoscopy shown no papilledema. Other systems were normal.

Urinary total volume in 24 hours was more than 2 liters (initially 5-6 liters). Urine was pale and colorless. The specific gravity was low and so also osmolality (150 mOsm/kg). Urine was free of reducing substance. Serum osmolality was, greater (288 mOsm/kg) than urine osmolality. Levels of serum sodium and chloride were not high (147 and 106 mmol/L respectively), Water deprivation test showed that she was unable to conserve water as demonstrated by low urine osmolality (270 mOsm/kg) inspite of marked dehydration (plasma osmolality 310m0sm/kg). Finally, she was subjected to pitressin test with 5 unite aqueous pitressin given subcutaneously at the time of dehydration (plasma osmolality 310m0sm/kg). Small volume of urine could be collected after an hour and there

was markedly raised urine osmolarityy (570 mOsm/kg) indicating Vasopressin deficiencyy in blood. Roentgenogram of the skull showed (a) thin and enlarged sella, (b) erosion of the posterior clenoid process and (c) sutural diastasis. There was no intraseller or suprasellar calcification. Isotope brain scanning indicated a fairly prominent area of increased radionuclcar activity in the pituitary region. Concentration in other parts of the brain and skull was within normal limits, raioimmunoassay for vasopressin was not possible in our case.

Other investigations showed hemoglobin 70%, TWBC 11000/cmm with neutrophil 55%, lymphocyte 38%, ESR 70mm in 1st hour. Blood urea 7mmol/L, serum creatinine 0.9mg/dl, serum calcium 9.9mg/dl, serum phosphate 5.5mg/dl, serum potassium 4.4mmol/l, blood sugar 6mmol/L, VDRL was nonreactive. Roentgenogram of chest and abdomen were normal. The case was diagnosed as organic Dl due to pituitary tumour, possibly craniopharyngioma. She was referred to a neurosurgeon for further management. She was given advice for liberal water intake and replacement therapy (Pitressin nasal spray), to be procured from abroad.

Original Article *Bangladesh J Nutrition 1994, 7(1): 9 - 13*

Management of Severe Protein Energy Malnutrition in Hospital Settings

ARM Luthful Kabir, CA Kawser, and M Q-K Talukder

Objective: Management of 155 severely malnourished children in the hospital with high energy full strength feeding from the beginning of management were studied.

Of these children, 127(82%) recovered and 7(4.5%) expired. Average period of hospital stay was 15.6 days. Daily weight gain per patient per day was 50.7±27.3 g, 77.8±46.3 g and 83.6±48.0 g respectively in marasmus, marasmic-kwashiorkor and kwashiorkor patients. Serum total protein and albumin changed remarkably on recovery in kwashiorkor and marasmic- kwashiorkor patients.

Original Article *Bangladesh J Child Health 1995; 19(1): 5-10*

Training of Trainers (TOT) Course on the Promotion and Management of Breastfeeding - an Evaluation of 19 Courses

ARM Luthful Kabir, CA Kawser, M Quamrul Hassan, M Shahidulla, Nazneen Begum, AKM Shahabuddin, M Q-K Talukder

Objective: A participatory technique rather than lecture-based training was adopted to conduct a Training of Trainers (TOT) course on the promotion and management of breastfeeding at the Institute of Child and Mother Health (ICMH), Dhaka.

Methodology: In total, 19 courses have been conducted with participants from various disciplines of 87 health care facilities having maternity facility. The characteristics of the facilitators, participants, course and the effect of this course as assessed through success of attaining the Baby Friendly Hospital award have been described in this paper.

Results: So far, 243 trainers were trained of which 213 (88%) were from the disciplines of paediatrics, obstetrics, junior doctors, nursing or administration. The average number of participants in each course was 13. The facilitators were mostly (87.5%) either paediatricians or obstetricians. In consequence, 31 hospitals have been promoted as Baby Friendly and 5 hospitals got the certificate of commitment.

Conclusion: It is concluded that participatory technique to a small group of participants is very much helpful for the development of human resource in a specific field.

Original Article *Journal of Community Helath Med. Res. 1995; 1 (2): 1-4*

Feeding Practices in Infants Attending the Outpatient Department of a Teaching Hospital

ARM Luthful Kabir, Nazneen Begum

Objective: To look into the feeding practices of infants with poor socioeconomic background.

Design: A prospective case series study

Setting: Outpatient department (OPD) of Mymensingh Medical College Hospital.

Duration: 1989-1990

Outcome measures: Prelacteal feed, age of onset of breast feeding, colostrum rejection, exclusive breast feeding, time and type of complementary food.

Results: One hundred and three infants between 6 to 12 months of age were studied. Accompanying mothers who attended OPD for the ailments of their infants were interviewed through a questionnaire about the feeding practices. There were 65 (63%) male and 38 (37%) female. Prelacteal feeds were given in all cases principally with sugar water (60%) and honey (29%). Colostrum was rejected by 49 (47.5%) mothers, 'social custom' being the main reason behind. Infants were put to the breast on or after 3rd day of birth in 74 (72%) cases and only 20 (19%) infants were given breast milk on the very first day. Exclusive breast feeding practice was found in only 22 (21 %) cases. Mothers introduced complementary food either too early or after an undue delay in 66 (64%) cases. Low energy dense food like barley (32%), rice paste with sugar (15%) and banana (9%) were used for the first complementary food. The mean weight of infants of 6 months of age was 6.83 kg and that increased to 7.03 kg at 12 months of age resulting in a decrease of 20% when compared with the percent of weight loss in the 50th centile of NCHS for boys over the period.

Conclusion: Feeding practices in infants of poor and illiterate parents were found sheer inappropriate as reflected by offering prelacteal feed, delay in the initiation of breast feeding, colostrum rejection, nonexistent exclusive breast feeding and early or late introduction of low energy dense complementary food resulting in poor weight gain.

Review Article *Bangladesh J Child Health 1995; Vol. 19(2) :53- 60*

Situation Analysis of Child Health in Bangladesh: 1994

ARM Luthful Kabir, CA Kawser, M Shahidulla, M Quamrul Hassan, M Q-K Talukder

Background

Child health is a top priority for all nations. But the real situation is quite grim in developing countries. To express the conviction the world leaders met in November 1990 and expressed their commitment to improve child health in all countries in the near future. To achieve this, experts had identified some targets and individual government selected some mid and end decade targets. This paper aims to analyze the present situation and compare the targets in different fields with actual achievements.

I. Present status

A. Demographic data on health

Children are our best resource. More than half of our total population are children (below 16) and 16.5% are under 5 years. Our children are the worst victims of poverty, illiteracy, malnutrition and diseases.

1. Infant mortality rate (IMR): IMR in Bangladesh is amongst the highest in the world. It declined from a level of 200 per 1000 live births in the early part of this century to 150 per 1000 in 1970s. The 1980s (produced a steeper decline to around 110 per 1000 and presently it is 85).

2. Under -5 mortality: Beyond infancy about 39 more children die between the ages of 1 and 5 years adding to a total of under five mortality rate of 122 per 1000 live birth. Thus half of all deaths in Bangladesh are in children under 5 years of age and 1/12 th of the newborn do not see their 5th birthday. Diarrhoea, acute respiratory infection (ARI) and infectious diseases are the main causes of this high mortality and malnutrition is the direct or indirect contributor of these deaths.

3. Mortality from ARI and its prevention program: The leading causes of death from ARI are pneumonia, measles and pertussis. These deaths can be prevented significantly through proper case management, use of antibiotics and immunization program. ARI control program was launched in September 1992 in Bangladesh to reduce death from pneumonia of 145,000 per annum to 30% by the year 2000.

4. Mortality from diarrhoeas and its prevention program: A third of all under five deaths are attributable to diarrhoea and malnutrition. Diarrhoea causes malnutrition and thus makes the child more vulnerable to diarrhoea. Each year over 65 million episodes of diarrhoea occur in children under 5 resulting in 260,000 deaths in the country.

B. Preventive, Promotive and Behavioral data related to child health

1. Expanded Program on Immunization (EPI) : EPI has made a significant breakthrough in the country. The intensive effort in 1991 involving all government, NGO's and, professional bodies had helped to boost the EPI achievement. The findings show that in 1993, 92% of children (12-23 months) nationwide received BCG, 80% received DPT3 and received measles, vaccine. In total 74% receivedall antigens (fully immunized). TT2 coverage of women (mothers of 0-11 months children) were found to be 80% and 75% of children were protected against neonatal tetanus at birth.

2. Education : A grim picture is seen in the field of education. It is poor in quality and quantity and neglected so long. We do not yet have the capacity to educate all the children in the country. Not only there is lack of school but the quality of education itself is poor. The poor quality of education is supposed to be due to poorly trained and supervised teachers, high teacher absenteism, a curriculum that is not relevant to the needs of the students/society and little time spent on acutal teaching/learning.

3. Water and Environmental sanitation: Overall 96% of the population has access to safe drinking water/ but only 16% households use tube well water for all purposes. The coverage places Bangladesh among the top of the developing countries attempting to achieving the goals set by the UN water and sanitation decade. But, sanitation continues to be a major problem. Presently, (35%) of households of rural areas have access to sanitary latrine.

4. Child labor and Abuse: Almost all children work to some extent, so the statistics on child labour are imprecise. Around 13 million Bangladeshi children between the ages of 6 and 10 are thought to be working with another 8 million aged 10-14. In the rural areas, most children work for their families - the boys in agriculture and the girls at home. In urban areas, 41 % of urban boys work as day labourers and 12% are self employed; 46% of urban girls work as day labourers (often as domestic servant) and 6% are self employed.

C. Neonatal Health Status

Neonatal health status is grim in Bangladesh. Neonatal mortality is all time high as the infant mortality rate. About 60% of infant deaths occur in the neonatal period in rural Bangladesh. The common causes of neonatal death are LBW and prematurity, tetanus, birth injuries, pneumonia and diarrhoea.

About a third to a half of all newborn have low birth weight (LBW), which may be a reflection of the maternal nutrition status in our country. The average weight and height of mothers are 42kg and 150 cm as against 58 kg and 162 cm of English mothers respectively.

D. Nutritional status

Bangladesh has perhaps the worst nutrition situation in the world exemplified by the fact that every day 655 children die from diseases associated from malnutrition. The earliest nutritional survey of Bangladesh in 1937 shows that weight and height for age between 7 to 12 years were comparable to those of western world. Over the decades, there has been deterioration in nutritional status. By 1982, 80% of children below 12 years have entered into 2nd and 3rd degree malnutrition. The major nutritional problems/issues of Bangladesh are identified on the basis of several studies carried out since 1962. These are:

* Chronic dietary energy deficiency
* Protein energy malnutrition (PEM)
* Maternal malnutrition
* Low birth weight
* Vitamin A deficiency
* Deficiency anaemia

* Iodine deficiency disorder (IDD)
* Other micronutrient deficiencies
* Problems with breastfeeding practices
* Problems with weaning practices

1. Protein Energy Malnutrition (PEM): Taking both height for age and weight for height into consideration, only 31% of all children between 6 and 71 months of age could be classified as 'not malnourished'. Remaining 69% of children are victims of malnutrition of one kind or another with 12% having severe malnutrition (stunted and wasted), 5% acute malnutrition (wasted) and 52% chronic malnutrition (stunted).

2. Iodine deficiency disorders (IDD): IDD situation is severe in Bangladesh. Total goiter prevalence (TGR) is 47%. Nearly, 69% of the population being biochemically deficient in iodine indicates that 100 percent of the population in Bangladesh are at risk of iodine deficiency.

3. Vitamin A deficiency: About 5 lacs children (6-71 months) are suffering from night blindness. And 30,000 children are blinded each year due to vitamin a deficiency i.e. 100 children are getting blind daily.

4. Infant Feeding : Breastfeeding situtation was worse until recently. Colostrum rejection was 90%, exclusive breastfeeding upto 5 months was nor. existent, prelacteal feed was universal, bottle feeding was practiced by 90% urban mothers for supplementary feeding (personal communication).

Research Article *Bangladesh J Child Health 1995; Vol. 19(1) : 11-17*

Change In Undergraduate Paediatric Medical Education-Demand of The Time

CA Kawser, **ARM Luthful Kabir**, M Shahidulla, MQ Hassan

High under-15 population and their morbidity requiring 60% attendance in health care facilities necessitate more emphasis on Paediatrics in undergraduate medical education. The existing situation, the felt need and possible suggestions have been put forward in this paper by studying the present curriculum, published articles on medical education in national and international journals, recommendations by different teams on medical education in this ocuntry and discussion with paediatricians.

The national aim and objectives of the current medical curriculum seem quite adequate. But, the mehtod to achieve it is quite vague and the proposed assessment system seems traditional. Paediatrics has been marked as minor subject along with Psychiatry, Skin and VD etc. The curriculum is theory based and topics are system or disease based and not problem oriented. The ward placement is for only 6 weeks-16% of total in internal medicine. Card system have been developed for continuous assessment in some medical colleges. But in practice, more lectures are being scheduled and students are not attending the ward as paediatrics is not assessed in the final examination. In final examination, 25% of marks and assessors are earmarked for paediatrics.

All paediatricians should give their maximum effort to make the subject a major discipline with separate examination. Problem oriented teaching with community exposure need to be emphasized. Self learning with formative sort of assessment rather than teacher/disease oriented teaching have to be developed to produce 'five star basic doctors' for this country.

Review Article *Journal of Bangladesh Coll of Phys Surg 1995; 14(1): 29-37.*

Scientific Evidence on the Benefits of Breast Feeding

CA Kawser, MQ Hassan, **ARM Luthful Kabir**

Recent resurgence of interest in breast feeding is observed both in developed and developing countries. Extensive research is continuing on the topic of breast feeding and breast milk with discovery of newer virtues.

It is now apparent that benefits of breast feeding are much more than just the advantage of feeding a baby on breast milk. The beneficiaries of breast feeding are not only the child but also the mother, the family and the society as a whole.

It is not only supplying the full complements of nutrition that are necessary for the new born but also helping the newborn in portecting from infection. It is even protecting from development of diseases in later life. Newer cytokines and growth factors are being identified and constituents are found to be modifying over period of breast feeding to match with the necessity.

The international interest has also reached our country and paediatricians, obstetricians, administrators and general physicians are showing newer interest in this respect. Medical professionals of various grades are getting involved in protection and promotion of breast feeding in the country to uphold the benefits that Bangladeshi population were enjoying before the invasion of artificial milk. The present review tries to summarise these newer virtues of breast milk and breast feeding to keep the professionals aware and help in their quest to optimise the use of this vast resource. The review will highlight some of the newer findings on different aspects of breast feeding.

Original Article *Bangladesh J Child Health 1997; Vol 21 (3/4) : 49-53*

Non Respiratory

Top Ten Diseases in the Paediatric Ward of A Medical College Hospital

ARM Luthful Kabir, MA Hamid Sheikh

Objective : To look into the most important morbidities and their outcome in the paediatric ward of a medical college hospital.

Design : An observational prospective case series study.

Setting : Paediatric ward of Mymensingh Medical College Hospital.

Method : Consecutively admitted 958 children of 1 mo - 13 years were studied. Diagnosis was made from history, physical examination and possible investigations.

Outcome measures : Prior consultation before hospitalisation, admission mode, accompanying person, top ten diseases, systemwize common cases, adequacy of management, outcome in relation to diseases and duration of hospitalisation.

Results: The mean age of patients was 3.48 yrs (SD± 3.56) male being 613 (64%) and female 345 (36%). Fifty five percent (55%) cases attended hospital straightway without having intervening consultation and 78% were admitted through emergency. In 78% cases mothers accompanied their children. The range of hospital stay was 1-90 days with the mean of 7.53 days (SD± 9.38). Top ten diseases comprising 765 (80%) patients were : pneumonia 258 (27%), diarrhoea 96 (10%), PEM 92 (10%), meningitis 77 (8%), helminthiasis 60 (6%), febrile convulsion 39 (4%), glomerulonehritis 38(4%), "encephalitis like disease" 37(4%), hereditary haemolytic anaemia 38 (4%) and non-CNS tuberculosis 34 (3.5%). Pulmonary cases were commonest (29%), followed by neurological (18%) and nutritional cases (11%). Patient care was adequate in only 49% cases. In total 547 (57%) children were discharged on improvement, 124(13%) absconded, 67 (7%) persuaded to leave, 28 (3%) referred to other hospital, 19 (2%) discharged on risk bond. Gross mortality was 173(18%) and the net one 56 (6%). The five important causes of mortality were bronchopneumonia 50 (29%), PEM 27 (15.6%), "encephalitis like diseases" 27 (15.6%), diarrhoea 20 (11.5%) and meningitis 17 (10%). Most of the deaths 116 (67%) occurred within 48 hours of admission into the hospital. Case fatality was highest in encephalitis like disease (72%).

Conclusion : Pulmonary, neurological and nutritional cases comprised the most paediatric inpatients. Most common disease with which children were hospitalized were pneumonia, diarrhoea, PEM, meningitis, and helminthisis. Five important causes of mortality were pneumonia, PEM, encephalitis like disease, diarrhoea, and meningitis. Hospital facilities for management of inpatients and emergency ones in particular, were inadequate.

Cor-triatriatum - A Rare Congenital Heart Defect Causing Recurrent Respiratory Infection : A Case Report and Review of Literature

A Hannan, **ARM Luthful Kabir**, Syeda Afroza, KK Talukder, Quamrul Hassan, F Ahmed, MQ-K Talukder

Introduction

Cor-triatriatum is a rare congenital heart defect with a prevalence of 0.1 percent of cases of congenital heart defects. In its commonest form a membrane partitions the left atrium into a proximal accessory chamber which receives the pulmonary veins and or distal or true left atrial chamber which always contains the left atrial appendage and the fossa ovalis. The defect results from failure of incorporation of the common pulmonary vein into the left atrium. Anatomic variants has been designated as diaphragmatic, hourglass and tubular types of cor triatriatum. The diaphragmatic type is the commonest where accessory chamber and the true left atrium are partitioned by a fibrous or fibromascular diaphragm. The diaphragm harbors an opening that is usually single but is occasionally multiple.

The least common and most primitive form of cor triatriatum is the tubular variety where the accessory chamber retains a vessel like shape that represents a relatively unmodified common pulmonary vein, the distal end of which joins the left atrium directly without an intervening membrane. The hour glass variety is the intermediate between the diaphragmatic and tubular varieties.

The functional consequence of uncomplicated cor triatriatum are analogous to those of congenital mitral stenosis, with elevated pulmonary venous and pulmonary arterial pressures. Cortriatriatum allows blood to flow across the partitioning membrane throughout the cardiac cycle but in mitral stenosis blood flow is possible only during diastole.

The clinical manifestation of uncomplicated cortriatriatum depend upon the degree of obstruction which ranges from functionally insignificant ridges of tissue to complete absence of a direct communication between upper and lower atrial compartments.

Case History

A 3 years 8 months old female child of non consanguineous parents hailing from Fatulla, Narayangonj attended the Paediatric out patient of the Institute of Child and Mother Health, Matuail, Dhaka on June 6, 1999 with the complaints of irregular fever and cough and not growing well observed from two years of age. She was delivered normally at term at home. Her mother didn't suffer from any significant illness nor took any medication during the pregnancy. The girl had no history of feeding difficulty, breathlessness, convulsion or generalized swellings in the past. She comes of a middle class family of her locality. The only elder brother is healthy.

On examination, she looked thinly built, febrile and mildly pale. There was no cyanosis, edema, fast breathing or chest indrawing. Her pulse rate was 104/ minute, regular and normal in volume. Blood pressure was 90/50 mm Hg. Neck veins were not engorged. Her height was 87 cm which was 87% of NCHS median and weight was 10.5 Kg which was 62% of NCHS median.

The precordium was slightly bulged. Apex beat was on the left 5th intercostal space in the midclavicular line and was normally felt. There was a systolic thrill palpable in the area between the lower left sternal border and the apical area. Left parasternal lift was absent. First heart sound (S1) and second heart sounds (S2) were audible in all the cardiac areas and were normal. The second sound was narrowly split and P2 component was heard louder in the upper left sternal border. A pansystolic murmur of grade 3-4/6 along with a mild diastolic murmur grade 2/6 was best audible in the space between the lower left sternal border and the apical area. There was no radiation of the murmur. Examinations of other systems showed no other abnormalities.

X-ray of the chest showed normal size and shape of the heart with fullness of the main pulmonary artery. Lung fields were unremarkable. ECG showed sinus tachycardia, right axis deviations (QRS axis = 140°) with right atrial and right ventricular hypertrophy. Two dimensional, M mode, color flow and Doppler examination showed the presence of a echogenic membrane partitioning the left atrium into 2 chambers. The proximal (accessory) chamber was larger than the distal chamber and received the pulmonary veins, while the distal chamber communicated with left ventricle with the mitral valves. Colour flow examination showed two openings in the partitioning membrane from which blood were passing from the proximal to the distal chamber throughout systole and diastole (Turbulent flow). The mitral, tricuspid, aortic and pulmonary valves were normal.

Review Article *Bangladesh J of Child Helath 1999; 23 (1/2) : 24-30*

Drug Therapy in Paediatrics

A Hannan, **ARM Luthful Kabir,** MQ Hassan, KK Talukder, MQ-K Talukder.

Because of on going growth and development, paediatric patients of different ages present different therapeutic challenges. The stage of development in the early years of life can markedly affect drug absorption, distribution, metabolism and excretion of drugs. Pharmacologically, children can not be regarded as miniature adults. Drugs are double edged swords. While they can save lives so can they endanger life.

Effective and safe drug therapy in neonates, infants and children requires an understanding in the differences in drug action, metabolism and disposition that are apparent during growth and development. Virtually all pharmacokinetic parameters change with age. Behavioral and psychological changes in adolescence require a different contract between the patient and the health provider. The dose, response and side effects of the medications in adolescence differ from those in children and adults.

Original Article (indexed) *Journal of Tropical Pediatrics 1999; 45(4): 291-293*

Nutritional Rickets without Vitamin D Deficiency in the Chakaria Region of Bangladesh

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Objective: Explore the aetiology and characterize the clinical aspects of rickets in children in Chakaria.

Methodology: Fourteen rachitic children and 13 children identified by subjects' families as unaffected were evaluated clinically and investigated.

Results: The age of rachitic children (9 males and 5 females) varied from 36 to 98 months (mean 69 months); their parents reported them being symptomatic of rickets since an average of 24 months of age (range 0-48). Rachitic deformities included knock-knees (10), bowed legs (4), and sabre tibia (3). Ten of the 14 affected children had active rickets as determined by serum alkaline phosphatase activities > 350 U/L; 7 of the 12 children subjected to x-rays had radiographic evidence of active rickets. The rachitic children had a mean alkaline phosphatase activity of 492 U/L (range 198-834; controls with mean 206 and range 138-331; $p<0.0001$), a mean serum calcium level of 9.6 mg/dl (range 8.5-10.4, not significantly different from controls), a mean serum phosphorous level of 4.3 mg/dl (range 1.9-5.6; controls with mean of 5.2, range 4.3-5.8; $p<0.003$), a mean serum 25-OH-vitamin D level of 20 ng/ mL (range 7-65 with two subjects less than 14; controls: mean 25, range 16-35; $p<0.008$), and a mean serum l,25-(OH)2 vitamin D level of 131 pg/mL (range 78-190; control mean 73, range 22-144, and 9 of the 13 subjects above the upper limit of "normal" $p<0.0005$). Of the 10 children with active rickets, only two had low vitamin D levels (one with hypophosphataemia), and one had hypophosphataemia; calcium deficiency was the most likely aetiology of the rickets in at least seven of the affected children. Interestingly, three "unaffected" children had physical findings consistent with rickets (each with beaded ribs, one also with widened wrists, another also with knock-knees) without elevated alkaline phosphatase activities.

Conclusion: The results of the study demonstrate that active rickets in Chakaria is not usually associated with vitamin D deficiency, and that the clinical presentation of rickets in Bangladeshi children is similar to that of African children with calcium-deficiency rickets. Furthermore, the findings of rachitic deformities and elevated serum l,25(OH)2 vitamin D levels among "unaffected" children suggest that subclinical calcium deficiency might be much more prevalent than previously suspected.

Polycystic Kidney Disease - A Case Report

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Introduction

Polycystic kidney disease (PKD) is a genetic or acquired disorder. The major inherited types are - Autosomal Recessive Polycystic Kidney Disease (ARPKD) and Autosomal Dominant Polycystic Kidney Disease (ADPKD). ARPKD is diagnosed both in antenatal and postnatal period in infants and young children. ADPKD is considered to be a disorder of adults but it also occurs in child hood. It usually presents in three modes[1]:

i) In uterodiseovery of large cchogenic foetal kidney, with or without renal cysts on routine ultrasonographic examination

ii) Identification of abdominal mass in an adult sometimes in a very young child and neonate.

iii) Identification of renal cysts on imaging studies in family screening for ADPKD.

In ARPKD, usually both kidneys are enlarged in size having numerous small cysts and impaired renal function. In this condition abnormality of kidney is associated with some changes in liver in the form of proliferation, elongation and dilatation of small bile ducts and ductules and periportal fibrosis.

Acquired cysts are more common in older persons. Multiple cysts are seen in association with potassium deficiency, congenital disorders, metabolic diseases, toxic renal injury and atrophic and scared end stage kidney.

In PKD cysts originate in renal tubules. Here proliferation of tubular epithelial cells occurs by endocrine, paracrine and autocrine factors. In addition, fluid that is abnormally accumulated with in the cysts derived from glomerular filtrate and to a greater extent by transepithelial fluid secretion. Abnormal synthesis and degradation of matrix components associated with interstitial inflammation are additional features in the pathogenesis of renal cystic diseases.

In this case, we are presenting a child seems to be suffering from ADPKD having multiple cysts of different sizes occupying whole of the left kidney except its upper pole but the function of the kidney was normal. Opposite kidney, ureter and urinary bladder were normal.

Ultrasonography, Intravenous urography and Isotope scanning were done to diagnose the case. Laboratory investigations were done to see the renal function.

Case Report

Mohammad, 21 months old male child. 3rd issue of non-consanguineous parents of Sonaigao of Narayanganj District attended OPD of Institute of Child and Mother Health with the complaint of a swelling on the left side of the abdomen for 22 days. He had no

history of pain in the abdomen, haematuria, fever and vomiting. His mother was in irregular antenatal check-up under a qualified gynaecologist and the period was uneventful.

On examination, the child was mildly pale, pulse 72/minute, BP 95/55 mm Hg. His weight was 9.86 kg, height 84 cm, wt/height 79.51% of NCHS mean scale and Z scoring -2SD. On examination of the abdomen, a palpable mass was detected in the left lumbar, hypochondriac, partly into the umbilical and epigastric regions. It measured 8 cm XI l cm. Consistency of the mass was firm to hard, surface was nodular, margin irregular, not mobile, overlying skin was free, did not move with respiration and finger insinuation was possible. Right kidney was not ballotable. On laboratory investigation, total count was 11, 500/c.mm and routine examination of urine was normal. Blood urea 38 mg/dl and serum creatinine 0.9 mgm/dl.

Imaging Procedures

Ultrasonographic examination : Left kidney was hugely enlarged in size. Multiple cysts of different sizes were seen to occupy mid and lower portions of the left kidney. Pelvicalyceal system and ureter on the left side were not dilated. Right kidney, right ureter and urinary bladder were normal. Liver, spleen, pancreas, testes and paraaortic groups of lymphnodes were also normal.

Intravenous urography : Both kidneys were excreting normally. Left kidney was enlarged in size. Faint translucencies separated by soptae were seen in the lower and mid portions of left kidney in the nephrogram. Nephrogram in the upper pole of left kidney was normal. Pelvicalyceal system of left kidney was compressed and pushed upward towards upper pole. Left ureter was normal. In right kidney - nephrogram, pelvicalyceal system and ureter were normal. Urinary bladder was also normal and there was no vesico ureteral reflux. No obstruction was noted in the urethra.

X-ray of the chest and skull were normal.

On isotope scanning (99m Tc DTPA and 99m Te DMSA):

DTPA renal scintigraphy: Right kidney showed good flow. In left kidney, tracer concentration was seen in the upper pole and rest of the area was cold. Excretion from the upper part of the parenchyma of left kidney was normal with mild hold up of tracer which subsequently cleared after administration of injection lasix. Time activity curve showed normal peak and sharp fall in right kidney but in left kidney, peak was delayed with rapid fall of the curve after lasix. Split function showed right kidney 65% and left kidney 35%.

DMSA scan: Right kidney was normal. In left kidney - radiotracer concentration was noted only in upper pole and rest of the left kidney was cold.

Case Report *Bangladesh J Child Health 2000; Vol 24 (3/4): 74-77*

Acute Rheumatic Fever Presenting As Mono Arthritis - A Case Report

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Introduction

Acute Rheumatic fever (ARF) and its sequel, rheumatic heart disease are major health problems of the developing countries of the world. Overcrowding, poverty and inadequate public health facilities are responsible for the high prevalence of the disease. Even before the advent of antibiotics, with overall improvement of life style, socioeconomic improvements and better public health facilities, the prevalence of the disease declined substantially in the past few decades in the developed countries of the world. ARF follows an antecedent group A beta hemolytic streptococcal infection of the throat. The clinical presentation of ARF is with any or a combinations of the five major signs of the disease. But migratory polyarthritis, and carditis are the most frequent signs with which majority of the children present. Other major signs e.g. Sydenhams chorea, subcutaneous nodules and erythema marginatum are rare and often present with carditis. It had been thought that ARF in the tropics differ somewhat from that in temperate countries. However, studies in India and Bangladesh have shown that the relative frequencies of the major manifestations of the disease are very similar.

Accurate diagnosis of ARF has always been difficult since many of the diagnostic criteria are based on the subjective interpretation of historical data. The Jones criteria proposed for the diagnosis of ARF in 1944 has been modified, revised and updated. Insidious onset carditis, rheumatic recurrence and pure chorea are the three exceptions to the Jones criteria. There are still controversies as to how strictly one needs to adhere to the Jones criteria. Studies have shown that strict adherence to the criteria may under diagnose ARF in certain parts of the world where ARF is common. Others stress the need for strict adherence of the criteria before subjecting the child to the long-term prophylactic treatment. There are few rare reports of cases of ARF to present with monoarthritis26. There is little known about follow up results of children presenting with monoarthritis if they subsequently develop ARF or not. Here we report a case presenting with monoarthritis who subsequently developed acute rheumatic fever with carditis.

Case history

Aklima, a 13 years old female child presented to the institute of Child and Mother Health (ICMH), Matuail, Dhaka on 3rd August 1999 with history of low grade fever for 15 days, pain in the left knee joint for 7 days and painful swelling of the same joint for 1 day. She had a history of sore throat 4 weeks prior to this illness. She didn't have any history of breathlessness, palpitation, chest pain, abnormal movements suggestive of chorea, abdominal pain or swelling of the body. Physical examination showed fever (Temp-101°F) and moderately swollen, tender, hot left knee joint which had restricted movement. Her pulse, respiratory rate and blood pressure were normal. She also didn't have any organomegaly. Precordial examination revealed normal first and second heart sound and no murmurs. Examination of other systems showed no abnormality. She was provisionally diagnosed to have enteric fever with arthritis of left knee probably due to acute rheumatic fever.

Investigations showed a high titre of TO and TH antibody in Widal test(> 1: 320), very high ESR (118mm, in 1st hour by Westergren). Total count of WBC was 24500/mm3 with 90% neutrophils.

Culture of throat swab didn't grow any organism. Her ASO titre was 600 lU/ml. Her chest X-Ray showed normal size and shape of the heart and unremarkable lung fields. X-Ray of the left knee joint showed only soft tissue swelling. Echocardiographic examination was done and showed trivial aortic regurgitation and mild mitral regurgitation. She was prescribed paracetamil and oral Ciprofloxacin for enteric fever. She was then advised for follow-up echo after six days.

On the sixth day of follow-up she had complaints of chest pain and mild dyspnoea on effort. On follow-up clinical examination, heart sounds were heard to be distant, an early diastolic murmur in the upper left sternal border suggestive of aortic regurgitation (AR) was heard. There was no pericardial rub audible. Radiological examination showed cardiomegally. The follow-up echo showed slight thickening of the valve cusps of aortic and mitral valves and presence of moderate pericardial effusion and grade II aortic regurgitation and mitral regurgitation. She was then diagnosed to have rheumatic carditis and again hospitalized. She was then treated with prednisolone 2 mg/kg body weight which was continued for two weeks then gradually tappered over the next two weeks. She showed clinical, radiological and echocardiographic improvement with the above treatment.

Clinical improvement was suggested by absence of cardiac symptoms like chest pain, palpitations, absence of fever, a reduction in ESR to 26 mm (1st hour Westergren), Radilogical improvement was suggested by decrease in cardiac size to normal.

Echocardigraphic improvement was suggested by absence of pericardial effusion, a reduction from grade II to grade I in regurgitation through both mitral and aortic valves. She was discharged with advises to continue Injection Benzathine penicillin 1.2 million units intramuscularly every 3 weeks for 30 years.

Case Report *Bangladesh Journal of Radiology and Imaging 2001; Vol. 9(1) : 37-40*

"Wilson's Disease" Presenting with Skeletal Deformity and Neurological Problems - A Case Report

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Introduction :

This is an autosomal recessive disorder marked by the accumulation of toxic levels of copper in many organs, principally in the liver, brain and eye. The gene for Wilson's disease, designated by ATP7B on chromosome 13a encodes a transmembrane copper transporting ATPase located to hepatocyte canalicular membrane. Normally 40% to 60% of daily-ingested copper (2 to 5 mg) is absorbed in the stomach and duodenum and transported to the liver loosely bound with albumin. Free copper dissociates and is transferred into hepatocytes, where it is incorporated with globulin to form ceruloplasmin and re-secreted into plasma. Ceruloplasmin accounts for 90% to 93% of plasma copper. Ceruloplasmin is again undergone endocytosis by hepatocytes, where degraded in lysosomes and excreted in the bile. In Wilson's disease, there becomes deficiency of both copper binding α2- globulin as well as copper transporting ATPase. Due to deficiency of ATPase there is defective excretion of copper through the bile canaliculi and it accumulates in liver leading to hepatic toxicity in the form of hepatitis and fatty liver followed by fibrosis and cirrhosis. The underlying mechanism of hepatic toxicity is oxidant injury and lipid peroxidation of mitochondria of hepatocytes. Simultaneously, due to low plasma cereuloplasmin level loosely bound copper with albumin becomes free easily and deposits in the brain, cornea, kidneys, bones etc.

Presence of Kayser Fleisher ring, a green to brown deposits of copper in the inner surface of Descemete's membrane in the limbus of both cornea is pathognomic sign of Wilson's disease.

Diagnosis of Wilson's disease is usually made by laboratory findings of elevated serum copper, low serum cereuloplasmin level and high urinary copper excretion. Liver biopsy and determination of hepatic copper are valuable adjuncts to diagnose those cases, where there is no clinical evidence of hepatic dysfunction. To exclude renal involvement estimation of creatinine, urea, calcium and phosphate level in blood is very much essential. Ultrasonography of liver, CT scan and MRI of brain and some times x-ray of limbs are additional means of diagnosing Wilson's disease.

Examination

Badsha looked well alert and was very co-operative. He looked short for his age (height for age was -6.3 SD, i.e., severe stunting). Gross joints deformities were noted in all four limbs. Chest was anteriorly bulged with presence of rickety rosary; both wrists and ankle joints were wide with genu valgum deformity. There is also pes cavus deformity of the chest. His pulse was 90 /min. BP-90/60 mm of Hg. There was no anemia, jaundice, clubbing or ankle edema. Temperature was normal. Examination of nervous system showed -normal mental

function. However he had dysarthia and intention tremor. Cranial nerves, motor and sensory systems, vision and hearing were all intact. There was no flapping tremor. Other system reveals no abnormality. Slit lamp examination - revealed Kayser Fleisher ring in the both cornea (Advanced), however, no sunflower cataract could be seen in any lens, which is suggestive of Wilson's disease.

Laboratory findings

- Serum ceruloplasmin 124mg/L
- Urine copper level was 0.39±0.01 mg/L.
- Serum calcium 8.6 mg/dl
- Blood urea 34 mg/dl
- Serum creatinine 0.66 mg/dl
- SGPT 40 IU
- Serum bilirubin 0.4 mg/dl

Imaging findings

a) USG of Hepatobiliary system - Liver was normal in size. Echogenicity of hepatic parenchyma was increased and echotexture was coarse. Gall bladder was smaller in size and its wall appeared thickened. No calculus was seen in gall bladder and billiary channels were not dilated. Pancreas and spleen were normal.

b) X-ray chest: There was decreased density of bones with widening of anterior ends of ribs. Diaphragm, heart and lungs were normal.

c) X-ray of both wrist joints A/P view: Decreased density of bones with splaying and fraying of metaphysis of lower ends of radius and ulna in both hands.

d) X-ray of the left ankle joint (A/P and lateral view): Decreased density of bones with coarse trabecular pattern.

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Complementary feeding : Why, When, what and how to be given ?

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Introduction

The family food that is given progressively to the infant from 5-6 months of age in addition to the breast milk is called complementary feeding (CF). The foods are given to cope with the growth (nutritional need) and development (physiological maturation) of the child to the increasing requirement of a wide variety of food other than liquid nourishment. By 'weaning' is meant the progressive transfer to the infant from breast milk to the usual family diet. Complementary food is synonymous with weaning diet but the former has better connotation of adding extra food without discontinuing breast milk.

The situation of complimentary feeding practices in our country is very unsatisfactory. The feeding is started either too early or unduly delayed with low energy dense food. In a national survey it was shown that only in 40.6% cases complimentary feeding was started at 5-6 months of age of infants and in rest of the 59.4% cases the onset time was inappropriate. More rural mothers started adding CF in earlier months. The type of food which were given to the infants were rice 37.6%, suji 31.8%, kichuri 21.2%, fruit juice 18.3%, vegetables 15.6%, eggs 11.9%, family mix 11.4%, dal 7 2% and meat 2.3%. Foods were offered mostly with spoon 37.8% followed by bottle 25% and hand 12%. In 25.1% cases various combinations were used. The frequency of offering the complimentary feed was 3.5 times in 24 hours.

Rationale of complementary feeding

From the stand point of physiological maturation and nufittoal need; by around 6 months of age most of the breast fed infants require some extra food. The rationale of starting complementary feeding at 5-6 months of age are :

- The infant is functionally mature to cope with complementary feeding at around 5-6 months of age.
- Exclusive breast feeding ensures optimal growth up to 5-6 months of age after which growth starts faltering with only breastfeeding.
- Infant passes through a phase of rapid growth during infancy.
- Infant requires very high energy and nutrients.
- Timely complementary feeding is helpful for the development of appropriate feeding behavior of the child.

During the intrauterine period, the fetus is 'fed' through the placental circulation. The fetus does not have to ingest, digest and absorb food nor is required to have an excretory system. Glucose is the main source of energy for the fetus. The situation changes radically

at birth after which the infant must take food by mouth, digest and absorb the nutrients and have functioning kidneys to excrete metabolic wastes and maintain water and electrolyte homeostasis. Both the sucking and extrusion reflexes, present at birth and active throughout the first few months of life, prime the infant to receive only liquid nourishment. If solid or semisolid food is placed in the young infant's mouth in the first few months of life, it is normally vigorously rejected by the action of the infant's normal reflexes. It is only at 4-6 months of age, when the tongue thrust or extrusion reflexes no longer persist, that the infant is able to cope with semi-solid foods; hence the food can be transported to the rear of the mouth and swallowed. Later, at 7 to 9 months of age rhythmic biting movements start to appear at same time as the first teeth are erupting, mastication has begun. Learning to grasp, first with a palmer grasp (5 mo), then an inferior and finally a refined pincer grip (9 mo), indicates a readiness for finger foods such as biscuits, bakes, toasts, cheese and others.

Many studies have demonstrated that growth of breast-fed infants differ from that of formula-fed infants and the growth of breast fed infants appear to falter as early as 2-3 months of age when compared with current WHO referrence data. But when the growth of breast-fed infants of developing countries are compared with the growth of breast-fed infants in the affluent societies, faltering of growth ocurs only after 6 months of age. This is evident not only from actual growth curves but also from growth velocity data and parameters obtained by fitting growth models to each group. So, the mothers of breastfed infants should not be mistakenly advised to begin complementary feeding before 6 months of age. Another study had shown that introduction of complementary foods to breast-fed infants in a low-income, developing country population can be delayed until 6 months of age without any adverse effect on later infant growth.

Infants undergo a period of very rapid growth in terms of weight, height and brain development during first year. The weight is doubled by 3-4 months, tripled by one year; length gain is 25 cm in first year and size of brain (OFC) increases by 11 cm in first year. This rapid growth pattern needs to be maintained by providing appropriate complementary feeding when breast milk alone can not cope with the increasing energy requirement of the infant.

All nutrients and energy dense feeds needed not only for maintenance of body functions and activity but also for growth. The requirements for both energy and protein during the first months of life are, on a per kilogram basis, about three times those of the adult. It is recommended that 120 kcal (0.439 MJ) per kg per day for infants 9-12 months. While glucose is the main source of energy for the fetus, the infant is highly dependent on fats for energy; breast milk provides 35-50% of daily energy intake in the form of fats. The fat content in hind milk is 4-5 times greater than in foremilk in some women. Infants are capable of regulating their energy intake by mechanisms not yet understood. A delicate balance of energy and a large number of nutrients is therefore required to ensure appropriate infant nutrition and health. Fortunately, an adequate diet depends less on a consideration of individual nutrients than on the range of foods to be given. For infants up to at least the age of 6 months, breast milk is the complete and perfectly balanced mixture of all required nutrients providing the full energy requirements under normal conditions.

The development of normal pattern of feeding behavior is dependent on interactions between mother and child at the time of feeding and timely introduction of appropriate complementary food. The problems bottle feeding, 'only night feeding', forceful feeding, 'non-solid feeding' can be minimized with appropriate feeding practices at right time by the mother. If there are no apparent problems, most babies can be accustomed to a complete family diet without any exclusion by 12-14 months.

Risks of too early complementary feeding

Short term risks

Diarrhoeal diseases

The greatest immediate risk to the breastfed infant of giving CF too early is diarrhoeal disease because of unsanitary environments. Studies in rural Bangladesh showed that 41% of the food and 50% of the water samples examined were contaminated with E. coli. Rotaviruses were detected in hand washings for 79% of the attendants of Bangladeshi patients who were hospitalised because 'of rotavirus associated diarrhoea.

Malnutrition

Decreasing in the frequency and intensity of suckling leads to insufficient breast milk. Food given will be so much a complement to breast milk but not as a partial replacement which may result in malnutrition.

Iron deficiency anemia

Introduction of cereals, particularly vegetables can interfere with the absorption of breast milk iron, which is low in concentration but high in absorbability, resulting in iron deficiency anemia.

Long term risks

Inappropriate CF -practices may also have a negative impact on health in the long term through two mechanisms:

- Cumulative effect of changes which, while starting early in life, result in clinical evidence of morbidity only years later.
- The creation of food habits leading to undesirable dietary practices, which finally contribute to health problem.

In practice these two mechanisms may be interrelated. As for example : An adults taste for salty food may be the result of early experiences and therefore, a learned experience, while the cumulative effect of hypernatremia over many years contributes to the development of hypertension.

Obesity

The hypothesis is that there is a relationship between feeding practices and overweight in infancy and childhood and obesity in adulthood. A high correlation has been found, however, between obesity at 12 months of age and later in life. Overfeeding is one of the main risk associated with bottle feeding and too early complementary feeding.

Once a mother assumes the responsibility of the amount of food her child receives, overfeeding becomes a possibility. Undue concern about the infant's nutrition can

contribute to overfeeding, particularly in societies where the image of a healthy child is a plump one.

Hypertension

High sodium intake is certainly one of the principal factors in the etiology of essential hypertension. A direct relationship is not easy to prove because there also appears to be contributing genetic factors. However, the relationship between high sodium intake and hypertension has been proved experimentally in rats, where sensitive rats with a high sodium intake only during the first 6 weeks of life still develop hypertension one year later. An association has also been found between hypertension and obesity.

Atherosclerosis

The role of dietary factors in the pathogenesis of atherosclerosis and Ischemic Heart Disease (IHD) is well known. The nutritional factors involved include diets high in energy and rich in cholesterol, saturated fats, protein but low in polyunsaturated fats. It is difficult to establish a link between infant feeding practices and a disease that manifests itself only some 30-40 years later. However, it has been recommended for children that limiting the consumption of saturated fat, fatty meats, cheese and eggs and encouraging the consumption of vegetables, fruits, cereals, lean meats have beneficial effects on later incidence of IHD.

Food allergy

Cows milk allergy is manifested clinically by gastrointestinal, dermatological or respiratory symptoms of varying severity, even by anaphylaxis. It was shown that infants who were breastfed for 6 months particularly those with a family history of allergies, had a lower incidence of atopic diseases than those who were artificially fed. There is evidence that prolonged breastfeeding and the timely introduction of carefully selected complementary foods contribute to the prevention of food allergies, particularly in predisposed infants.

When to introduce complementary food?

Considering the adequate growth in exclusively breast-fed infants having birth weight >2500g, even in a low-income population of a developing country and the risks associated with too early and inappropriate complementary feeding it is recommended that complementary feeding needs to be offered at the age of 6 months. Moreover, around the age of 6 months the infants are fully developed functionally with the disappearance of extrusion reflexes, ability to transport food to the rear of mouth, development of rhythmic biting movements and eruption of first teeth.

Food type

In general, children prefer simple, uncomplicated foods. Food from family meal may be adapted for the child and served in child-sized portions. It is especially desirable that the baby receive foods varied in both texture and flavor. The infant who is accustomed to many kinds of food is less likely to grow up with definite food dislikes. To add variety to the infant's diet, different vegetables and fruits may be added to cereal feedings. It is

important to offer a variety of dishes and not to allow the youngster to continue on one or two favorite foods. The infant's daily food should be a balanced one and should incorporate food from the three main food groups in addition to breast milk:

1 Energy yielding foods like rice, wheat, sugar, molasses etc.

2 Food for body building and repair like meat, fish, egg, milk etc. and

3 Disease preventive food like fruits and vegetables

Food should be chosen keeping in mind the food value of the food items from food table. Infants should not be fed whole cow's milk in the first year of life as recommended by the Committee on Nutrition of the American Academy of Paediatrics. Babies should not be offered certain foods for the first 2 years because of the risk of aspiration. The dangerous foods that are best avoided are nuts, popcorn, puffed rice, large chunks of meats, whole grapes etc.

Food preparation

The principles of food preparation should be a 'multi mix' one from the different food groups. The carbohydrate should be 55%, fat group 35% and protein 10% of the total amount of food prepared for the baby. Particular attention should be given to proteins, irons and vitamin A and C as these nutrients are frequently found to be deficient in the diet of young infants. The food should be freshly prepared, heated before serving, well meshed and energy dense. To make the food energy dense extra oil may be added to the preparation. There are several advantages of making the food sour (by adding lemon juice) e.g. the absorption of iron is increased, it is more difficult for harmful bacteria to grow in it, food is thinner and easier for an infant to eat and the children may prefer the taste.

Frequency of offering food

The infant stomach is very small and he needs to be served frequently in small amounts at least 5-6 times a day. The size of serving offered to a child is very important. A tablespoon of food offered for each year of age at each feeding is a good guide to follow.

Food serving

In the weaning stage, infants learn many manipulative skills, including chewing and swallowing soild food and the use of utensils. They learn to eat a variety of textures and flavors of food, to finger food, and then to feed themselves. Mother or other attendant could offer the food after washing hands with soap water. Cup-spoon may also be used. All utensils should be washed with safe water before and after serving. The infant should never be forced to take food rather encouraged to take food. Any new food should be initially offered once a day in small amounts (1-2 teaspoonfuls) considering the child's acceptance and gastrointestinal response. Any small spoon that easily fits the baby's mouth may be used. New foods are generally best accepted if fairly thin and dilute. It is usually wise to offer the same food daily until the baby becomes accustomed to it and not to introduce new foods more often than every 1-2 weeks. If the child develops vomiting or diarrhoea, the food may again be tried after a few days to see the response.

One of the common causes of vomiting in young children is food forcing. The child may develop food refusal as a result. A normal, healthy child will eat without coaxing. Refusal of food is sometimes due to a child's being too active and overtired. Fatigue can be avoided by planning a short rest period for the child before meals or by providing a picture book or TV cartoon for the child's quiet enjoyment. An overanxious parent can affect the appetite of the infant or the child. Emotions can retard the flow of gastric juice and inhibit digestion. Refusal to eat may also be the result of too much attention. Child enjoy the attention of their parents and soon learn that refusal to eat is one way to obtain it. If a child refuses to eat the family meal should be completed without comment and the plate should be removed. This procedure is usually harder on the part of the parents to practice on the child. At the next mealtime, the child will be hungry enough to enjoy the food presented.

Importance of breastfeeding along with complementary food

Breast milk continues to be an important source of energy and high quality nutrients through the second year of life. It can provide about one third to total energy and protein, 45% of the vitamin A and almost all of the vitamin C that a child needs provided mother herself is not deficient.

Conclusion

The complementary food for the infant should be commenced after six months of age prepared from all groups of food locally available. The food should be energy dense and offered frequently (not forced) giving special attention to the food hygiene. Breastfeeding needs to be continued for total two years period.

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Cranial Ultrasonography of Young Children - A Study of 253 Cases

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Objective: The aim of this study was to explore different neurological problems of children by ultrasonography of brain.

Methodology: Total 253 young children of different age groups having neurological problems had undergone ultrasonographic examination in the Department of Radiology and Imaging of the Institute of Child and Mother Health, Matuail, Dhaka. A high resolution ultrasonography machine with different probes were used for the examination and standard sonographic criteria were followed to diagnose different diseases.

Results: The imaging findings were - hypoxic ischaemic encephalopahty (36.7%), hydrocephalus (27.7%), meningitis (6.7%), holoprosencephaly (0.8%), porencephalic cyst (0.4%) and normal (27.7%>).

Conclusion: Common neurological problems as evaluatd by cranial ultrasonography are hypoxic ischemic encephalopathy, hydrocephales and meningitis. This study recommends cranial ultrasonography of young paediatric patients having neurological problems.

Original Article *Bangladesh Journal of Urology 2002; 5(1): 10-12*

Prevalence of Clinical Enlargement of Prostate in Elderly Males in A Rural Area of Bangladesh

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Introduction: Enlarged prostate is a major health problem among elderly males. In daily urological practice the main workload is related to enlarged prostate. Enlargement of the prostate is directly related to the aging process. As the life span is increasing day by day the problems related to enlarged prostate is also increasing. Till now, we do not know the extent of enlarged prostate in our country.

Objective: To determine the prevalence of enlarged prostate in elderly males (above 50 years) in a rural area of Bangladesh.

Methodology: The study was conducted in 1998 in rural area (Gazipur sadar upazilla) which was purposively selected. One thousand male population of above 50 years were studied. The population were evaluated for enlarged prostate by face to face interview with a questionnaire developed on the basis of International Prostatic Symptoms Score (IPSS), digital rectal examination (DRE), USG, uroflowmetry and urethrocystoscopy procedures.

Result: Five hundred eighteen persons who showed IPS score more than 10 were subjected to DRE. Out of this population, 323 (32.3%) were confirmed to have enlarged prostate by DRE (grade 1-4). USG of DRE negative (grade 0) cases could elicit more 34 (3.4%) enlarged prostate cases considering the size of prostate and the post void residue (PVR, more than 60 ml). Uroflowmetry and urethrocystoscopy of symptom positive but DRE and USG negative cases could further detect 5 (0.05%) more cases of enlarged prostate. Considering the drop out cases (111), by calculation 33 persons (3.3%) were presumed to have enlarged cases.

Conclusion: The prevalence of enlarged prostate cases in this study were found to be (39.5%). The extent of symptomatic enlarged prostate is enormous. A nation wide study of enlarged prostate and its subsequent management is to be addressed immediately.

Original Article *Bangladesh Journal of Urology 2003; 6(1): 7-9*

Paediatric Urological Diseases at The Urology Ward of Dhaka Medical College Hospital - Apropos of 183 Cases

Md. Afiquor Rahman, **ARM Luthful Kabir**, Md Jahirul Islam, SAMG Kibria

Objective: To look in to the clinical pattern of pediatric urological problems of children hospitalized in a tertiary hospital of Dhaka.

Methodology: This was a retrospective study of five years (1996-2000). The sources of information were the registers with the history, physical examination and investigation reports. These documents were evaluated for the clinical diagnosis.

Results: The children population with urological problems represented 8.7% of all admission. The most common five urological problems were stricture urethra (30.0%), hypospadias with chordee (24.5%), posterior urethral valve (12.5%), pelvi-ureteric junction (PUJ), obstruction (10.%) and metal stenosis (3.8%).

Conclusion: Common pediatric urological problems in hospitalized children are stricture urethra, hypospadias, posterior urethral valve, pelvi-ureteric junction obstruction and meatal stenosis belonging so both traumatic and congenital origin.

Original Article *Bangladesh J Child Health 1995; 19(1): 5-10*

Clean Intermittent Self-Catheterisation (CISC) for Management of Stricture Urethra - A Study of 30 Cases

Afiquor Rahman, Faruk Ahmed, **ARM Luthful Kabir**

Background: Stricture urethra is a common urological problem and management is difficult sometimes.

Objective: Thirty patients with stricture urethra were advised to manage their problem of stricture with Clean Intermittent Self-Catheterisation (CISC).

Methodology: The patients were counseled and advised to practice CISC on an out patient department (OPD) basis.

Results: Twenty nine patients were found successfully practising CISC and one patient needed hospitalisation for urethral bleeding. Three patients developed orchitis and were managed conservatively.

Conclusion: Clean intermittent self-catheterisation (CISC) is a good procedure to manage stricture urethra at home by the patients themselves.

Original Article (Indexed) *Mymensingh Medical Journal 2004, 13(1): 53-58*

Rickets among Children of A Coastal Area of Bangladesh

ARM Luthful Kabir, Rahman M, Talukder K, Rahman A, Hossain Q, Mostafa G, Mannan MA, Kumar S, Chowdhury AT

Background: Many children with rachitic deformities have been reported in southern coastal area of Bangladesh but the actual rate of prevalence was not known.

Objective: A survey was conducted to determine the magnitude of rachitic problem among the children of Chakaria thana of Cox's Bazar district of Bangladesh.

Methodology: Nine hundred children between 1-15 years selected randomly from 30 villages of total 340 villages. Face to face interview of the parents was taken and the children were examined for evidences of rickets. Serum calcium, phosphorus, alkaline phosphatase (ALP) were estimated and radiology of limbs were done in all clinically suspected cases and in a control of every eighth child.

Results: Seventy eight children (8.7%) had physical features suggestive of rickets. Fifty eight (6.4%) children had 'clinical rickekts' (positive physical feature(s) but normal ALP and negative radiology), 12 (1.3%) children had 'biochemical rickets' (positive physical features and raised ALP but negative radiology) and 8 (0.9%) children had 'confirmed rickets' (positive physical features, raised ALP and positive radiology). Out of 78 children with rachitic feature(s), Pectus carinatum was found as the most common clinical feature in 26 (33.3%) children followed by genu valgum in 23 (29.4%) cases. Twenty two normal children (2.2%) had raised level of ALP(>300U/L).

Conclusion: The prevalence of rickets is high (about 1%) in children of Chakaria and further study is needed to find out the exact aetiology of rickets in children there.

Original Article *Bangladesh J Obstet Gynaecol, 2004; Vol. 19(1) : 11-16*

Magnitude and Risk Factors of IUGR in a Tertiary Hospital

Farid Ahmad, Nazneen Begum, Ferdousi Islam, **ARM Lutful Kabir**, Fazlur Rahman, Aminur Rahman, Bilkis Sikder, Quamrul Hasan, Sameena Chowdhury, Kohinoor Begum

Background: Intrauterine growth retardation (IUGR) is usually determined by estimating foetal weight. Ultrasonography plays an important role in diagnosing IUGR. In addition to foetal weight, other factors as amniotic fluid volume, placental maturation, maternal weight, height and physical effort during pregnancy and parental height should be taken into consideration in determining IUGR.

Objective: The objective of this study was to estimate the magnitude of IUGR and to determine its risk factors in the pregnant women of third trimester of pregnancy.

Methodology: he study was a cross sectional type of study conducted in the department of Radiology and Imaging of the Institute of Child and Mother Health (ICMH), Dhaka, performed between July 2000 and March 2001. Five hundred and twenty two women of third trimester of pregnancy with singleton pregnancy and alive foetus were enrolled for the study and ultrasonography was done. Mean age of the women was 23.4 years.

Results: Most of them were educated (10 years education 55.3%) with good socioeconomic background (annual income Tk. 60,000-3,00,000/-). Ninety percent of the women were housewives. Out of 522, total number of IUGR was founding 160 (30.7%) cases - among them 118 (73.8%) were symmetric and 42 (16.2%) were asymmetric IUGR. Some factors were found significant in developing IUGR. Mothers having weight <45 kg found 3.57 times, height <145 cm 1.9 times and moderate and severe physical effort during pregnancy were 1.8 times vulnerable to develop IUGR than mothers having weight >45 kg, height > 145 cm and no exposure to moderate and severe physical effort respectively.

Conclusion: The magnitude of IUGR was 30.7%. There were more cases of symmetric IUGR than asymmetric. Low maternal weight, height and moderate to severe physical effort during pregnancy have influence in developing IUGR.

Original Article *Bangladesh J Child Health 2004; Vol 28 (3): 76-80*

Activities of Lactation Management Centre (LMC) at a National Level Hospital in Bangladesh

Nazneen Kabir, **ARM Luthful Kabir**, Sariatasnim, S Afroza, Fulkumari Rozario, Sharmeenasayeed, Ferdousi Islam, Sameenachowdhury

Objective: To review the services of LMC of a national level hospital.

Methodology: The present study was carried out at the LMC of ICMH from 1999 to 2003. It was a retrospective study where records of mothers were reviewed to find out the activities of LMC to support the establishment of breast feeding by those mothers. Two specially trained nurses under the supervision of an Obstetric and Gynaecology consultant provided services in the center on counseling, correction of position and attachment and newer Oketani breast massage technique along with identification of the breast problems and their treatment.

Results: A total of 18,449 mothers received the services of LMC during the study period. There had been an increasing tendency to attend the center over the years. Most of the attending mothers (47.3%) were in the age group of 14 to 23 years. All mothers were counselled for the benefits of breast-feeding, 92.2% mothers required the correction of positioning and attachment and 37.3% required specialized Oketani breast massage technique for successful lactation. Sixteen percent mothers had various types of breast problems of which engorged breasts (28.9%), plugged nipple (13.6%) and sore nipple (11.4%) were most common.

Conclusion: LMC plays a vital role in helping lactating mothers. Common skills needed are counseling, correction of position and attachment and Oketani breast massage technique in certain cases. Engorged breast was the most common breast problem.

Case Report *Bangladesh J Child Health 2006; Vol 30 (1/2/3) : 36-39*

Malignant Infantile Osteopetrosis - A Case Report

Soofia Khatoon, Nasima Akter, SM Shahnawaz Bin Tabib, **ARM Luthful Kabir**

Introduction

Osteopetrosis is a rare congenital, heterogeneous group of genetic disorders characterized by increased bone density due to impaired bone resorption by osteoclasts. It was first described by Albergs Schonberg in 1904. It is one among the disorders causing osteosclerosis of tubular bone and/or hyperostosis of cortical bone. Four types of human osteopetrosis have been reported. That include severe malignant infantile osteopetrosis (MIOP) which is an autosomal recessive lethal form, adult benign autosomal dominant form, intermediate autosomal recessive osteopetrosis (ARO) and a distinct form of osteopetrosis due to carbonic anhydrase 11 deficiency associated with renal tubular acidosis, cerebral calcification and mental retardation. Primary underlying defect in all types are abnormally dense bone formation and failure of resorption of calcified cartilage. This is due to failure of osteoclast to resorb bone. The increased bone fragility in osteopetrosis is due to failure of collagen fiber to connect osteons properly and also due to defective remodeling of woven bone into compact bone.

Incidence of osteopetrosis is 1 per 20,000-500,000 for dominant form and 1 per 200,000 for recessive form. Because of rarity of this type of malignant infantile form of osteopretrosis, we like to report this case.

Case Report

An 11 months old female child, only issue of consanguineous parents hailing from Narayanganj was admitted in ICMH in September 2004 with repeated attacks of low grade fever since 6th month of age and not growing well for same duration. The fever was not associated with chills and rigor but often associated with cough. She also had gradual distension of abdomen for last 2 months. She was born normally and had uneventful postnatal history. She has achieved neck control at 6th month of age and unable to stand at presentation. On examination, her weight was 5.5 kg (WAZ -4 SD: severe underweight and HWZ - 2 SD: moderate wasting), length was 67cm (HAZ -7 SD: severe stunting), OFC 42.5 cm. There was prominent frontal bossing, depressed nasal bridge and wide open anterior fontanel. Patient was moderately pale and febrile (temperature-100° F). Cervical, axillary, epitrochlear lymph nodes were palpable, size less than 1cm, firm and non tender. Heart rate was 96/ min, respiratory rate was 36/min. Liver was enlarged, 10 cm from right costal margin, firm, non tender, smooth surface and spleen was also enlarged, 12 cm along its long axis. No neurological abnormality was found. Vision and hearing were normal. Skin and mucous membrane were also normal. Examination of other systems revealed no abnormality. Investigation revealed: Hb: 6.8 gm/dl, ESR: 26 mm in 1st hr, TC : 30,000/cumm, N 21%, L 51%, M 02%, E 04%, Band from: 03%, Myelocyte: 03%, Metamyelocyte: 02%, Promyelocyte: 05%, Blast cell 03%. Blood film shows anisopoikilocytosis of red blood cells, mostly macrocytic. A fair number of tear drop cells and a small number of fragmented cells were present.

Nucleated red cells were present in a proportion of 25 per 100 leukocytes. Granulocytes showed shift to the left down to the stage of myeloblast. However, immature cells including all the precursor cells accounted for about 20%, basophils were not seen. Platelets were scanty. Comment: Leukoerythroblastic blood film.

S. calcium 6.8 mg/dL, serum inorganic phosphate 4.4mg/dL. Serum electrolytes showed sodium 140 mmol /L, potassium 4.07 mmol /L, chloride 108 mmol /L, total CO_2 21 mmol /L, serum creatinine 6 mg/dl, serum alkaline phosphatase 2600 U/L. Blood group 'A' positive.

X-ray skull showed increased density in the bones of skull, more marked in periorbital bones, maxilla and mandible. X-ray of lower limbs showed increased density in diaphysis of the long bones. There was wide band like translucency with coarse trabecular pattern in the metaphysis with loss of differentiation between cortex and medulla and having bone within bone (endobone) appearance. Increased density was also seen in epiphysis and in the bone of pelvis.

Bone marrow study showed a cellular marrow fragments. These were composed of haemopoietic cells trapped in fibrous elements. The cell traits showed depressed erythropoiesis with moderate dyserythropoiesis. Granulopoiesis showed left shifting. Megakaryocytes were not seen. A large number of osteoclasts was present. Features were consistent with Osteopetrosis.

She was diagnosed as a case of Malignant Infantile Osteopetrosis with Failure to thrive. She was treated with antibiotic, blood transfusion, prednisolone, calcium and vitamin D (BON-D3) and feeding. She was discharged after 22 days with advice to attend follow up clinic in Paediatric outpatient department.

Weber Christian Disease: A Case Report

MM Hossain, S Afroza, **ARM Luthful Kabir** O Haque, M Hossain

Introduction

Weber-Christian Disease (WCD) is a rare and poorly understood disorder of the adipose tissue. The exact aetiopathogenesis of this condition is largely unknown and it is also called idiopathic lobular panniculitis. In 1892, Pfeifer first described the skin condition now known as Weber-Christian disease, or idiopathic lobular panniculitis. In 1925, Weber further depicted the syndrome as case of "relapsing non-suppurative nodular panniculitis". In 1928, Christian emphasized the significance of fever as a part of the syndrome. Henceforth, the syndrome is known as Weber-Christian Disease (WCD). WCD may occur in young children, but it mostly affects people from fourth to seventh decades of life. The skin manifestation is reflected by recurrent crops of erythematous, sometimes tender and edematous subcutaneous nodules. The lesions are symmetric in distribution and predominantly involve the lower extremities but lesions can also occur on the trunk, upper extremities and rarely on the face. The lesions resolve in a couple of weeks, leaving an atrophic depressed scar. Malaise, fever, and arthralgia frequently occur. Nausea, vomiting, abdominal pain, weight loss, bone pain, myalgia, hepatomegaly and or splenomegaly may also occur. WCD may involve the internal organs like lungs, heart, intestines, spleen, kidney, and adrenal glands. In patients with inflammation involving visceral organs, significant morbidity and mortality may occur. WCD being a rare condition and our experience of good therapeutic response to corticosteroid prompted us to report this case and highlight the clinical and diagnostic features.

Case report

A 9-year-old male child, 1st issue of a day- labourer, weighing 21.5 kg, immunized as per EPI schedule admitted into Institute of Child and Mother Health (ICMH), Dhaka with the complaints of fever for two years, pain and swelling of multiple small and large joints for one and a half year, non productive cough and difficult breathing for 10 days before admission. The joint pain was not migratory and there was no history of morning stiffness. He had been suffering from repeated attacks of common cold since 2 years of age. He denied any history of trauma or abdominal pain. There was no history of contact with a tubercular patient.

On examination, he was found dyspnoeic, mildly pale, febrile, tachypnoeic and had tachycardia. He had multiple erythematous nodules over the back of the trunk and dorsal aspect of hands. The nodules had atrophic central area. Locomotor system examination revealed swollen and tender knees, ankles, elbows, wrists and small joints of hands. He had apex beat in the left 5th intercostal space just lateral to mid clavicular line, palpable P2 and gallop rhythm. Lungs were full of rackles and rhonchi. He also had hepato-splenomegaly with ascities. Other systemic examinations were normal.

Laboratory investigations showed Hb 10 gm/dl, total WBC counts 18,600/cmm with neutrophilic leukocytosis (P 77%) and raised ESR (43 mm in first hour). Urinalysis showed

hematuria (15-20 RBC/HPF). Blood biochemistry was normal for renal and hepatic function. Immunological tests were negative: rheumatoid factor, L.E. cells, antinuclear antibody, p-ANCA and c-ANCA. There were bilateral reticulonodular shadows in the lungs on radiology and mild tricuspid regurgitation on echocardiography. USG showed organomegaly and ascitis but no evidence of pancreatitis. Skin biopsy showed subcutaneous fat lobules necrosis with massive infiltration of neutrophils, lymphocytes and histocytes.

There were good numbers of foamy macrophages. The epidermis was unremarkable. But dermis was replaced by fibrous tissue except for one focus which contained amorphous matrix having foam cells, lymphocytes and neutrophils. No granuloma or malignancy was observed. These features were compatible with Weber - Christan disease (WCD).

The child had good therapeutic response with steroid and other supportive measures within two weeks of initiating therapy. He was on monthly follow-up. One year clinical, hematological and radiological follow-up revealed no relapse of the disease with disappearance of nodules, regression of hepatosplenomegaly, disappearance of ascitis, normal ESR (11mm), and marked improvement of reticunodular shadows on lung fields.

Original Article (Indexed) *Mymensingh Medical Journal 2007 16(2): 177-80.*

The Relationship of Placental Weight with Birth Weight

Kabir N, Kawser CA, Rahman F, **ARM Luthful Kabir,** Rahman A.

Objective: To assess the relationship between placental weight and birth weight,

Methodology: Two hundred forty six pregnant mothers, who were otherwise healthy, were prospectively followed in a city hospital during antenatal period until delivery and immediate post-partum period. Height of mothers was measured initially and weight measured at each visit during the antenatal check-up. Placental weight and birth weight of babies were measured by one of the authors immediately after delivery by a weighing scale.

Results: Eighty one percent of the mothers were between the age group of 20-29 years. The BMI of 92% mothers was 18.5 and above. Most of the mothers came both with primigravida (42%) or second gravida (33%) and in 25% cases 3rd or onwards. In 49% cases the placental weight was between 401-500 gm, in 30% cases >500 gm and in 21% cases 400 gm or less. There was delivery of appropriate-birth-weight babies in 85% cases and low-birth-weight babies in 15% cases. It was observed that a very strong correlation existed between placental weight and birth weight ($r = 0.391$, $p<0.001$). Even this correlation was stronger in small for gestational age babies. However, there was no correlation between placental weight and APGAR score at one minute.

Conclusion: It is concluded that increment of birth weight occurs with increase of placental weight. If placental weight can be measured by ultrasonography in second or early third trimester of pregnancy birth weight is possible to be assessed.

Original Article (Indexed) *Iran J of Paed. 2009; 19(2): 107-116*

Severity of Rotavirus Diarrhea in Children: One Year Experience in a Children Hospital of Bangladesh

Selim Ahmed, **ARM Luthful Kabir**, Aminur Rahman, Maleeha Hussain, Soofia Khatoon, Abdul Hannan

Objective: This study was conducted to determine the hospital prevalence, clinical severity and treatment outcome of rotavirus versus non-rotavirus diarrhea in children attending a secondary level children hospital of Bangladesh.

Methods: Total 601 children aged from 1 month to 5 years with watery diarrhea were enrolled and their stool samples were analyzed by ELISA for rotavirus antigen.

Findings: Totally, 41.8% of the stool samples were ELISA positive for rotavirus. Sixty-four percent Rota positive patients and 60.85% of non-Rota patients were treated at outpatient department. The mean age (+SD) of the patients was 12.06±9.85 months. Second half of infancy showed highest prevalence (38.6%) of rotavirus gastroenteritis. Vomiting was significantly higher in rotavirus diarrhea than non-Rota diarrhea (P=0.001). Dehydration status ranged from mild to moderate in 83% of Rota and 80% of non-Rota group. Among the hospitalized patients, majority of Rota and non-Rota (98.8% and 94.6% respectively) patients recovered uneventfully. There were six deaths, two in rotavirus group and four in non-rotavirus group.

Conclusion: Second half of infancy showed highest rota virus diarroea and vomiting was significantly higher in rotavirus diarrohea than non-rotavirus diarrhoea. Dehydration status ranged from mild to moerate in most of the rota and non-rota diarrhoea. Almost all cases of diarrhoea recovered uneventfully.

Original Article (Indexed) *Indian Pediatr. 2009 Mar;46(3):213-7. Epub 2009 Jan 1.*

Hospital Management of Severely Malnourished Children: Comparison of Locally Adapted Protocol with WHO Protocol

Hossain MM, Hassan MQ, Rahman MH, **ARM Luthful Kabir**, Hannan AH, Rahman AK.

Objectives: To compare the effectiveness of locally adapted Institute of Child and Mother Health (ICMH) protocol with the WHO protocol for the management of severely malnourished children in Bangladesh.

Design: Quasi-experimental non-randomized clinical trial.

Setting: Hospital based.

Participants: Severely malnourished children (2-59 mo) with weight for height<70% (n=60).

Intervention: Children treated with either WHO protocol (Group I, n=30) or ICMH protocol (Group II, n=30).

Outcome Variables: Clinical improvement, weight gain, time taken to achieve target weight gain, and mortality among the study subjects.

Results: Mean (SD) weight related to gain in Group I and Group II was 11.2 (4.1) and 11.1 (3.9) g/kg/day, respectively. The weight gain was not related to the age group or type of malnutrition. The time taken for edema to subside (7.3 d vs 8 d) and for improvement of appetite (6.5 d to 7.3 d vs 6.7 d to 8.4 d) was similar between the groups. The target weight gain was achieved in 28.3 (11.5) days in Group I against 27.9 (6.2) days in Group II (P=0.88). The mortality rate was 6.7% in each group.

Conclusion: Treatment of severe malnutrition with locally adapted ICMH protocol using locally available foods is as efficacious as the WHO protocol.

Original Article (Indexed) *J of Ped. Infec. Dis. 2010 5(1): pp. 71-76*

Clinical profile and seasonality of rotavirus infection in children of Bangladesh

Ahmed, Selim, Hassan, M. Quamrul, Nasrin, Shayla, Muhsin, Abu Ubayeed M,
ARM Luthful Kabir

Background: Rotavirus (RV) is the single most important causative agent for severe dehydrating childhood diarrhea worldwide. RV diarrhea is a tremendous social and economic burden upon the people in developing countries. In Bangladesh, the proportion of RV diarrhea in children is increasing compared to other infectious diarrheal agents primarily because of improvements in water sanitation.

Objective: This hospital-based cross sectional study was carried out in a children's hospital of Bangladesh to highlight the clinical presentations and seasonal predilection of RV diarrhea.

Methodology: A total of 601 children under the age of 5 years presenting with acute watery diarrhea were enrolled, with collected stools tested for presence or absence of RV antigen by enzyme linked immunosorbent assay (ELISA).

Results: Forty-two percent of the samples were ELISA positive for RV antigen; 72% of those RV+ children were under 12 months of age and 92% were under 24 months. Nausea, vomiting and large families (>5 members) showed significant association with RV+ diarrhea compared to RV-diarrhea (P=0.004, 0.001 and P=00.006 respectively). In RV+ diarrhea, the purging rate was also significantly higher (P=0.043). Mild to moderate fever and dehydration were noted in 82% and 84% cases of RV+ diarrhea respectively. RV+ diarrhea peaked during winter months (January through March).

Conclusion: The cause of acute watery diarrhoea in rota virus was in 42% cases. Nausea, vomitting and large family size showed significant association with rota virus diarrhoea. Mild to moderate fever and dehydration were noted in rota virus diarrhoea which also peaked during winter months.

Original Article (Indexed) *Virus Genes. 2010; 40(3):347-56.*

Molecular Characterization of VP7 gene of human Rotaviruses from Bangladesh

Ahmed K, Ahmed S, Mitui MT, Rahman A, **ARM Luthful Kabir,** Hannan A, Nishizono A, Nakagomi O.

Objective and Methodology: This study was carried out during July 2005-June 2006, to characterize rotaviruses circulating in Bangladeshi children less than 5 years attended a peri-urban hospital.

Results: The proportion of rotavirus diarrhea was 39.5%. Genotype G2 was dominant (45.5%) followed by G1 (24.8%), G12 (9.6%), G9 (8.5%), and G4 (2.1%). G2 were mainly in combination with P[4], G1 and G9 with P[8], and G12 with P[6]. Phylogenetically, Bangladeshi G1, G2, and G12 were closely related with the respective types from India, whereas Bangladeshi G9s of lineage III were with strains from Belgium and Australia. A G9 strain of lineage IV was clustered with strains from Sri Lanka and Turkey. Compared with prototype rotaviruses, Bangladeshi strains showed several amino acid substitutions at the antigenic sites of VP7.

Conclusion: This study showed that the generation of diverse strains continued as evidenced by long G2, short G1 and G9 strains, and various combinations of G and P types.

Blood Lead levels of Secondary School Students in Dhaka, Bangladesh after the Elimination of Leaded Gasoline and Phase-out of Two-stroke Vehicles: study on One Hundred Children

Selim Ahmed, Shayla Nasrin, **ARM Luthful Kabir**, AB Mohammad Zakaria, Mohammad Saiful Islam Seraji, Mahbubur Rahman, Mohammad Alauddin

Background: Lead (Pb) is a proven environmental toxicant throughout the world. Elevated blood lead level (BLL) adversely affects the neuro-cognitive and behavioral development of children. Considering the worst source of lead pollution, the government of Bangladesh banned leaded petrol and phased out two-stroked vehicles from Dhaka cityaâ,"the capital of Bangladesh"in late 1999. In 2000, on the verge of introducing unleaded gasoline, a baseline survey showed high mean value of BLLs (15 µg/dL) in school children of Dhaka much higher than the CDC's permissible level of 10 µgm/dL.

Methods: This cross sectional, follow-up study was conducted to see the current status of BLLs in school children of Dhaka city. Total 100 students from two schools, 50 girls and 50 boys from grade six through ten, were randomly selected and their finger-pricked bloods were analyzed for Pb levels.

Results: The mean (±SD) BLLs was 15.31±5.81 µgm/dL; and the majority (84%) of the students tested had BLLs higher than 10µg/dL. The BLLs was found significantly higher among the students who used to play outside house premises in a dusty environment (p=0.03) and among the frequent users of a traditional eye cosmetics, surmaa, (p= 0.032). No significant associations were noted between BLLs and the gender of the study subjects, their housing status, and the distance of the houses from the school.

Conclusion: The mean blood lead level (BLL) is still high in school children who used to play outside house premises in a dusty environment and also among the frequent users of a tredationally eye cosmetc - surma. The mean BLL is still alarmingly high in the studied school children that the BLL have not declined significantly despite taking several visibly effective measures.

Immunoproliferative Small Intestine Disease (IPSID): Case Reports

K.M. Abdus Salam, **ARM Lutful Kabir**, Abdul Mannan, Kamrul Ahsan, Mahbubur Rahman, Wadud Sarker, Sabiha Akter, Sharmin Afroze

Introduction

IPSID is a variant of mucosa associated lymphoid tissues (MALT) lymphoma. Malignant lymphomas of small intestine are relatively common in certain geographic areas, also in developing countries especially in Middle East and North America. There are 3 subtypes: a) Burkitt lymphoma- which is common in children and affect terminal ileum with extensive abdominal involvement b) Western type of non-Hodgkin lymphoma involves various parts of small intestine most commonly large B cell type. c) Third type Mediterranean lymphoma pre-dominantly involves proximal small intestine affecting mainly older children and young adults. WHO classified IPSID as a special type of extra nodal marginal zone B-cell lymphoma.

IPSID is classified for management purpose as stage-1 early bowel involvement with no visible tumor. Stage-2 advanced disease, bowel wall involvement with mesenteric lymphadenopathy. Stage-3 advanced bulky tumor with mechanical complications.

IPSID is unique mature B cell neoplasm mostly found in age group 10-35 years of low socio economic group in developing countries. Geographically, majority of cases are reported from Middle East, North and South Africa and the Far East.

Clinically they present with low grade fever, weight loss, intermittent diarrhoea, pain in abdomen and finger clubbing. Intestinal obstruction, abdominal masses are common in advanced stage. Many diseases have similar presentations particularly in developing countries. These include chronic infections e.g. abdominal tuberculosis, parasitic infestations, and malabsorption syndrome.

Exact etiology of IPSID is unknown but genetic predisposition and some environmental factors play major roles. Among the causative organisms campylobacter jejuni, giardiasis, and Vibrio cholerae are thought to be implicated in the causation of IPSID. Main pathologic features of IPSID are the presence of dense mucosal infiltrate of centrocyte-like cells and many plasma cells involving small bowel mucosa predominantly in the proximal parts.

Many patients with IPSID were found to have abnormal immunoglobulin alpha heavy chains which can be detected by immunoelectrophoresis in 20-90% of cases.

Clinical features of IPSID are often similar to those of abdominal tuberculosis especially in developing countries and IPSID may be mis-diagnosed and treated as abdominal tuber-culosis.

So, far our knowledge, there is no publication regarding IPSID in our country. We are reporting two cases of IPSID for awareness of clinicians.

Case -1

A 15 year old boy of class ten, of a con-sanguineous parents hailing from Nowabpur Dhaka admitted in pediatric unit of Sir Salimullah Medical College (SSMC), Dhaka on 7th June 2009 with irregular loose motion for 3yrs and gradual weight loss for same duration. He was well 3 yrs back, since then he had been suffering from repeated attacks of loose motion, 9-10 times per day, profuse amount with no blood or mucus. He had significant weight loss, low grade fever and abdominal pain during this period. For this illness he was hospitalized several times in pediatrics and medicine departments of medical colleges of Dhaka city and also in Bangabandhu Sheikh Medical University (BSMMU). He was diagnosed every time as intestinal tuberculosis and treated with full course anti- TB drugs but there was no significant improvement. He did not suffer from any major illness in the past. His development was as per age and was immunized according to EPI schedule. He was the 3rd issue, other sibs and parents are healthy. They belongs to low social class.

On examination, he was ill, grossly emaciated, moderately pale, jaundice, edema and ascites were absent but finger clubbing was present. Skin survey revealed BCG mark and hypo and hyper pigmented areas. His vital signs were within normal limits, wt-22.5kg, Ht-138cm and BMI was 12.7. He had stomatitis, glossitis and slightly tender abdomen with mild hepatomegaly, examination of other systems revealed no abnormalities. Provisional diagnosis was malabsorption syndrome and differential diagnoses were cystic fibrosis, hyperthyroidism and intestinal tuberculosis (MDR type).

Investigations showed Hb-67%, ESR-50 mm in 1st hr, and non specific blood picture. Liver functions tests were normal except low serum albumin (3 gm/dl), low serum total protein (5.8gm/dl). Electrolytes were normal except hypokalemia (3mmol/l). Protein electrophoresis was within normal range except slightly increased gamma globulin (17.2%, normal-upto 16.3%).Tissue glutaminase, and fecal fat analysis were normal but stool culture showed Campylobacter. Thyroid function tests and renal function tests were normal. Mantaux test (MT), sputum for AFB were negative and X- ray chest were normal. USG of abdomen showed mesenteric lymphadenopathy, CT scan of abdomen showed gut wall lymphoid tissue enlargement. Barium follow through of stomach and intestine was normal. Endoscopy of upper GIT revealed velvety appearance of 2nd part duodenum with reduced peristalsis. Histopathology of duodenal tissue showed two cystically dilated glands in lamina propria and dense infiltration of lymphoid cells and plasma cells, lymphoid cells also infiltrated the mucosal lining epithelium suggesting IPSID at stage-2.

We started treatment with combination chemotherapy (cyclophosphamide, vincristine, procarbazine and prednisolone) of 6 cycles each of 28 days plus tetracycline 1gm daily in divided dose for six months along with fluid, electrolyte and nutritional management. After 4 cycles of chemotherapy we repeated endoscopy and biopsy of upper GIT which showed remission but the patient develops severe back pain due to osteoporotic changes in spines. We stopped chemotherapy for one cycle but repeat endoscopy and biopsy showed recurrence. Then we again started chemotherapy to complete another 2 cycles.

Follow-up during treatment in the hospital showed marked clinical improvement in weight gain, normal bowel habit, disappearance of finger clubbing and further follow-up 3months after completion of therapy revealed clinical remission and histological remission.

Case - 2

A 9 years old girl hailing from Bangla bazar, Bhola was admitted in department of paediatrics on April 2009 with complaints of abdominal pain for 12 months, weight loss for 6months, alternate diarrhoea and constipation for 1½ months, low grade fever for 14 days. She was reasonably well 12 months back since then she had diffuse pain in the abdomen which was intermittent and colicky in nature. She had no history of contact with TB patient. Her birth history and developmental history were normal and was immunized as per EPI schedule. She belongs to a low socio-economic family. On examination, she was ill looking, emaciated, moderately pale, temperature 99°F, clubbing present in both extremities. She had no lymphadenopathy, or any organomegaly, abdomen was distended with mild diffuse tenderness. Her weight was 15 kg, height 115cm, BMI 11.3.

Investigations showed TWBC 7400/cumm, (P 60%, L 30%, M 3%, E 7%), Hb 64%, ESR 110 mm in 1st hr and her Blood group was O+ve. Mantaux test-17mm, X-ray chest-normal and USG of Abdomen showed mild ascites and enlarged para aortic lymph nodes. Liver function tests were normal except raised alkaline phosphatase (738 U/l). Stool examination including culture was normal. She was diagnosed as a case of Disseminated Tuberculosis and Anti TB chemotherapy was given for 6 months and on follow up she had no significant improvement after 6 months of anti TB treatment.

She again presented with similar complaints but more severe in nature and got admitted in paediatrics department on March 2010. We again investigated her and found S.calcium 8.5mg/dl, Magnesium 1.8mg/dl, Electrolytes Na 141 mmol/l, K+3 mmol/l, Cl 104 mmol/l. Her renal functions tests and liver function tests were normal. CT scan of abdomen revealed enlarged mesenteric lymph nodes and Endoscopy of upper GIT showed lymphoma like feature and biopsy specimen from duodenal mucosa reveals IPSID at stage-1.

After correction of fluid and electrolytes we started treatment with tetracycline 1gm daily orally along with nutritional management. Her general condition improved, diarrhoea disappeared and weight gain started within 2 weeks of treatment. Patient was discharged and kept under follow-up; her condition was improving gradually in all parameters. Endoscopy of upper GIT was repeated again after 8 months of therapy and biospy was taken. Histopathology revealed remission of IPSID and treatment continued for 12 months.

Original Article (Indexed) *Mymensingh Medical Journal 2012; 21(3):497-502.*

Genotypes of Rotavirus Diarrhoea in a Children Hospital of Bangladesh

Ahmed S, Hussain M, Akhter S, Islam T, Ahmed SU, **ARM Luthful Kabir**

Background: Globally, rotaviruses are the single most important etiologic agents of severe childhood dehydrating diarrhea that accounts for more than 125 million of cases, 25-55% of all hospital admissions for diarrhea and ≈600,000 deaths every year. In Bangladesh, while overall diarrhea related deaths are declining, the proportion of diarrhea deaths due to rotavirus is increasing.

Objective: This study was aimed at estimating the burden of rotavirus diarrhea and isolating the genotypes of rotavirus in a children hospital of Bangladesh; thereby endorsing a logical search for an appropriate rotavirus vaccine.

Methodology: This cross sectional study was carried out in the Institute of Child and Mother Health (ICMH), Matuail, Dhaka, Bangladesh during 2006-2007. Children aged between one month and five years suffering form diarrhea were enrolled in the study. Stool samples were analyzed by ELISA for rotavirus antigen. The rotavirus-positive samples were further analyzed for genotype determination.

Results: Among 656 stool samples, 39.5% samples were positive for rotavirus antigen. The mean age of the children studied was 12±9.9 months; the peak being in the second half of infancy. G2 was identified as the most dominant genotype (45.5%) followed by G1 (24.8%), G12 (9.6%), G9 (8.5%) and G4 (2.1%) genotypes. Since G2 were found to be the predominant circulating rotavirus strain in this study and some other studies in Bangladesh.

Conclusion: The G2 genotype was identified as the most deminant genotype (45.5%) followed by G1 (24.8%) genotype.

The recommended vaccine for prevention of rotavirus infection in Bangladesh should cover this strain to have maximum effectiveness.

Original Article (Indexed) *Int. J Scientific and Research and Publication. 2012; 2(7)*

Non Respiratory

The Etiological and Demographic Characteristics and Health Problems of the Hospitalized Adopted Children in Bangladesh: Study on 54 cases

Selim Ahmed, Rahamot Ali Sheikh, Shayla Nasrin, **ARM Luthful Kabir**

Objective: Worldwide, approximately 40,000 children per year are moved between more than 100 countries through adoption. By law, guardianship, not adoption, is permitted in Bangladesh. To the best of our knowledge, no scientific study on guardianship or adoption is ever reported from Bangladesh. Our study, for the first time, is reporting on some of the basic characteristics of adoption in Bangladesh.

Materials and methods: This cross sectional study was conducted on the hospitalized adopted children between September, 2009 and October, 2010 in the Institute of Child and Mother Health (ICMH), Dhaka, Bangladesh. Total 54 adopted children, who were hospitalized due to different health problems, were included in the study.

Result: The mean (±SD) age of the studied adopted children was 4.29±3.47 months. Among them, 42 (77.8%) were female and 12 (22.2%) were male child. All adoption happened among unrelated Muslim families. Infertility was the commonest (72%) reason for adopting a child. No adoption took place according to the existing guardianship law in Bangladesh, and none was legally documented. Financial insolvency and the death of the biological mother reasoned for allowing adoption in 50% and 29.6%% of cases respectively. In about one-third of the cases, the biological parents received money from the adopting parents. Acute respiratory tract infection, gastroenteritis and undernutrition were the major health problems of the adopted children. Since Islamic law does not allow inheritance of wealth to the adopted children, all the adopting parents left the inheritance issue to be solved "in future".

Conclusion: The Children are adopted at the mean age of 4.29+3.47 months. Female children are adopted more than males ones. No adoption is legally documented. Financial insolvancy or death of the biological mother are the important causes of adoption. Respiratory tact infection, diarrhoea and malnutrition were the major health problems of adopted children.

Recommendation: The current guardianship law needs wide publicity, proper execution and strict monitoring. This law necessitates re-evaluation or possible adaptation into a full adoption law that can secure the future rights of the adopted children.

Detection of Human Bocavirus in the Cerebrospinal Fluid of Children with Encephalitis

Marcelo Takahiro Mitui, S.M. Shahnawaz Bin Tabib, Takashi Matsumoto, Wahida Khanam, Selim Ahmed, Daisuke Mori, Nasima Akhter, Kentaro Yamada, **ARM Luthful Kabir**, Akira Nishizono, Maria So¨ derlund-Venermo, and Kamruddin Ahmed

Encephalitis is an important cause of morbidity and mortality worldwide. In the industrialized countries of Europe and America, the annual incidence of acute encephalitis is 7.3 cases per 100 000 persons. Up to 71% of these patients experience lasting sequelae, and up to 7.4% die. A myriad of infectious agents are associated with encephalitis, such as herpes simplex virus, which is common in adults, and the varicella zoster virus and enterovirus, which are common in children. The cause of 70%–85% of cases of encephalitis worldwide remains unknown, despite the use of a wide range of diagnostic methods. This indicates the presence of unknown agents or known pathogens that normally infect other organs but are not expected to cause encephalitis.

We report 4 children with encephalitis associated with human bocavirus (HBoV) 1 or 2. All children were severely underweight, and 2 died; 1 of them had a matching HBoV2 nucleotide sequence isolated from serum and bocavirus like particles in the cerebrospinal fluid that were observed with electron microscopy. No further pathogens were detected in the cerebrospinal fluid of these patients.

In conclusion, we are beginning to understand the significance of HBoV1 and HBoV2 as pathogens. Further studies are needed to determine whether HBoV3 and HBoV4 can cross the blood brain barrier and to what extent HBoVs cause encephalitis or encephalopathy in other countries. Overall, human bocaviruses should be considered in pediatric cases of encephalitis.

Hydatid Cyst: A Case Report

Md. Delwar Hossain, Shahin Akter, **ARM Luthful Kabir**, Wahida Khanam, Md Jashim Uddin Mazumder, Md Shahidul Haque, MA Mannan, Nazmul Hossain, Rezaul Haque, Zamil Ahmed

Introduction

Hydatid cyst (HC) disease is a parasitic infection. It is a tissue infestation caused by the larval stage of a parasite, Echinococcus granulosus. Egranulosus causes cystic echinococcosis, which has a world wide distribution. Although the liver and lung are the most commonly involved organs, hydatid disease can occur in all viscera and soft tissues. Four species are recognized and the vast majority of infestations in human are caused by E. granulosus. In cystic echinococcosis, man are accidental hosts and are usually infected by handling an infected dog.

The different species of echinococcus have different geographical distributions and involve different hosts. The hydatid tapeworm (E. granulosus) requires two hosts to complete its life cycle. Dogs (and other canines) are the definitive host and a variety of species of warm-blooded vertebrates (sheep, cattle, goats, horses, pigs, camels and man) are the intermediate host. Man are accidental hosts and do not play a role in the biological cycle.

The adult worm inhabits the small intestine of the definitive host, is attached to the mucosa by a double row of hooklets contained in its scolex and has at least three proglottids, which contain numerous eggs. The eggs pass out in the faeces of the dog and stick to the animal's fur or to grass. These eggs can survive for at least a year in the nature. Intermediate hosts ingest eggs when grazing on contaminated ground and the embryos are released after hatching in the small intestine. Embryos then enter the portal circulation through the intestinal wall and travel to visceral capillary beds, usually the liver or the lung, where they develop into cystic metacestodes. The parasite then grows to form a cyst filled with fluid. Development into a mature worm within the intestine of a definitive host occurs over a period of 4–7 weeks.

Cough, chest pain, breathlessness are common presenting symptoms. The fully developed cysts are composed of three layers. The outer layer, or pericyst, is composed of inflamed fibrous tissue derived from the host; the exocyst is an acellular laminated membrane; and the innermost layer, or endocyst, is the germinative layer of the parasite and gives rise to brood capsules (secondary cysts), which bud internally. An intact cyst, if large, may be filled with litres of fluid. The fluid, which is antigenic and may contain debris, contains hooklets and scolices and is referred to as hydatid sand. It has characteristic radiographic and sonographic features. Early diagnosis by serology and imaging techniques, and early medical and surgical intervention are the key to successful management of hydatidosis.

Case report

A 5 years old girl 3rd issue of non consanguineous parents, completely immunized admitted into ICMH with the complaints of fever, cough and chest pain over 4 months.

Fever was initially low grade and later turned to high grade intermittent. Cough was non productive and associated with central chest pain. She used to play with dogs at home and had no history of contact with TB patient. She was treated locally with ceftriaxone without any significant improvement. She was moderately pale and vital signs were within normal limit. Her weight was 13 kg, height 92 cm. WAZ -3.1 SD, HAZ -3.8 SD, BMI 15.3 (50th centile). The child had restricted movement on right chest, central trachea and apex beat in normal position. She had decreased vocal fremitus, dull percussion note and diminished breath sound on right side as well. Chest findings were normal in the left side. She also had hepatosplenomegaly.

Laboratory investigations demonstrated that she had low Hb (8.8 gm/dl) and high ESR (97 mm in 1st hr), insignificant MT (04 mm). Her x-ray chest showed obliterated cardiophrenic angle with normal costophrenic angle in the right side and a circular dense homogenous opacity in upper, mid and lower zones of the right lung. The left lung was normal. USG of abdomen illustrated a 56 mm X 42 mm size mixed hypoechoic area with multple internal septa in the pasterio-superio-medial part of right lobe of liver with enlarged spleen. CT guided FNAC of the right lung confirmed a large cystic lesion and aspiration of about 30 ml clear watery fluid could be collected. Fluid contained many degenerated cells, foamy macrophages and a significant number of hooklets of E. granulosus. The child was referred to a thoracic surgeon who performed surgical excision of the cyst and further treated with tablet albendazole 10 mg/kg / day as single dose for six months. She had been on follow up in the following three years with disappearance of liver cyst and no further recurrence or any complaints.

Nephrogenic Diabetes Insipidus (NDI): A Rare Presentation in Early Infancy- A Case Report

M Akteruzzaman, Z Islam, S Afroza, **ARM Luthful Kabir**, SK Paul, M Rahman

Introduction

Diabetes insipidus (DI) is a rare disorder in infant and children. Incidence of DI is approximately 3 in 100,000 with higher incidence among male (60%). DI is two types: central and nephrogenic. Nephrogenic diabetes insipidus (NDI) is less common than central. NDI can be either congenital or acquired. The majority of patients (87%) are diagnosed within the first 2.5 year of life. NDI a disorder of resistance to action of antidiuretic hormone (ADH) is characterized by polyuria, polydipisa, low urine osmolality and high serum osmolality. Majority of congenital NDI follow the X-linked recessive mode of inheritance. It is caused by an X-linked mutation affecting only male. Autosomal dominant and autosomal recessive forms of NDI equally affect both sex and only 10% of the families with congenital NDI. Diagnosis of DI may be difficult in infants and children because of non-specific presenting features like: failure to thrive, irritability, vigorous sucks with vomiting, fever without apparent cause and difficulty in micturition. Sometimes, family history of DI or mental retardation can be clue for diagnosis. The defect in NDI has been suspected to be located at any of the steps from the binding of antidiuretic hormone to the renal tract.

Case report

A 30 months old boy of non-consanguineous parents presented with excessive intake of water since 6 months of age. He used to pass excess volume of urine for the same duration. On enquiry, the boy had no fever or vomiting but constipation. He was on usual family diet. His development of mile stone was age appropriate. No other family member had similar illness.

On examination, patient was alert and active with a pulse rate 98/min, respiratory rate 24 /min, temperature 98.4°F and blood pressure 80/60 mm of Hg (normal), with no dehydration. His weight was 10 kg (WHZ-2.6 SD), length 86 (LHZ-1.7SD), fundoscopy normal. Renal systemic examination was normal.

Investigations revealed normal sodium (142 mEq/L) and potassium levels (4mEq/L). Renal functions were normal with seium creatinine 0.27 mg/dl and serum calcium 10.5 mg/dl, plasma osmolality 303 mOsm/L urine osmolality 1005 (low) and normal arterial blood gas analysis. Ultrasound for kidney, urinary bladder and MRI of brain were normal.

The striking finding was persistent polyuria; urine output in 24 hour was documented in hospital more than 3 litre/m^2/day. Based on the findings of polyuria and high plasma osmolality with low urine osmolality, a diagnosis of DI was done and water deprivation test was performed which failed to increase urinary specific gravity above 1005. Nasal

spray of vasopressin increased urine osmolality from 104 mOm/1 to 105 mOsm/L with no change of plasma osmolality which was diagnostic of NDI.

The child was treated with free fluid in the form of water every day and hydrochlorthiazide (2.5mg/kg/day). After three months evaluation, weight gain was age appropriate, daily water intake reduced to 2-2.5 litre /24 hours and had serum osmolality of 305mOm/kg, urinary osmolality 90mOsm/kg and urinary specific gravity 1005. The child was followed up monthly for 3 months, then 3 monthly for one year.

Original Article (Indexed) *J Negative Results Biomedicine 2013 Feb 1;12-15*

Circulating rotaviral RNA in children with rotavirus antigenemia

Ahmed K, Bozdayi G, Mitui MT, Ahmed S, **ARM Luthful Kabir**, Buket D, Bostanci I, Nishizono A.

Background: Rotavirus antigenemia is a common phenomenon in children with rotavirus diarrhea, but information is scarce on aspects of this phenomenon, such as genotype specificity, presence of intact viruses and correlation between genomic RNA and antigen concentration. Such information may help in understanding rotavirus pathogenesis and eventually be useful for diagnosis, treatment and prevention.

Methods and findings: Serum samples were collected from children who presented at hospitals with diarrhea. Antigenemia was present in 162/250 (64.8%) samples from children with rotavirus diarrhea. No specific rotavirus genotype was found to be associated with antigenemia. Rotavirus particles could not be found by electron microscopy in concentrated serum from children with high levels of antigenemia. In passaged rotavirus suspension a significant correlation (r=0.9559; P=0.0029) was found between antigen level and viral copy number, but no significant correlation (r=0.001480; P=0.9919) was found between antigenemia level and viral copy number in serum. When intact rotavirus was treated with benzonase endonuclease, genomic double-stranded (ds) RNA was not degraded, but when sera of patients with antigenemia were treated with benzonase endonuclease, genomic dsRNA was degraded, indicating genomic dsRNA was free in sera and not inside virus capsid protein.

Conclusions: Antigenemia is present in a significant number of patients with rotavirus diarrhea. Rotavirus viremia was absent in the children with rotavirus diarrhea who participated in our study, and was not indicated by the presence of antigenemia. The significance of circulating rotavirus antigen and genomic dsRNA in serum of patients with diarrhea deserves further study.

Original Article (Indexed) *Tropical Medicine and Health Vol. 42 No.3, 2014, 127–132*

Evaluation of the Safety and Adverse Effects of Goreisan/Wulingsan, a Traditional Japanese-Chinese Herbal Formulation (Kampo), in a Rat Model: a Toxicological Evaluation

Selim Ahmed, Ryuichi Uchida, Maleeha Hussain, **ARM Luthful Kabir**, Mohammed Zakiur Rahman, Mohammad Sharifur Rahman, Sumihisa Honda and Mohammad Abdur Rashid

Background: Diarrhea is the second leading cause of death among children less than 5 years of age. Most of these deaths occur in developing countries in the tropical areas of Africa and South Asia. Goreisan/Wulingsan, a formula of Japanese-Chinese medicinal herbs (Kampo), has been used for the treatment of diarrhea and vomiting from ancient times in East Asia.

Objective: Therefore, we planned a randomized controlled clinical trial of Goreisan/Wulingsan in Bangladeshi children. Although, it is believed to be safe in East Asia, information regarding its toxicity on animals is scarce. Since Goreisan/Wulingsan has never been used in Bangladesh, it was necessary to ensure the safety of the formula in an animal experiment.

Methodology: Rats were assigned to a control group (normal saline, n = 4) or various Goreisan/Wulingsan groups (n = 26) receiving doses of 1 to 8 mg/g/day (7.7 to 61.5 times the recommended pediatric dose) over a period of 25 days. Their activities and health conditions were observed until they were sacrificed, after which blood samples were collected for biochemical liver function tests. The kidneys, liver and heart tissue were collected for histopathological study.

Results: No lethality was observed during the experiment. All of the rats consumed the doses completely and no constipation was observed, suggesting the absence of any inhibitory effect on intestinal motion. Also, no abnormal neurological activity was detected, nor any significant elevation of AST, ALT or ALP levels, except for AST and ALT at the highest dose of 8 mg/g/day. Histopathological studies of the kidneys, liver and heart tissues revealed no abnormalities.

Conclusion: In conclusion, our results showed that Goreisan/Wulingsan is safe for rats, thereby justifying the use of the drug in a human trial.

Original Article *J Bangladesh Coll Phys Surg 2015; 33(4): 195-201*

Barriers of Appropriate Complementary Feeding Practices in Under – 2 Children

Shanjoy Kumar Paul, Sunirmal Roy, Quazi Rakibul Islam, Md Zakirul Islam, Md Akteruzzaman, Md Abdur Rouf, **ARM Luthful Kabir**, Syeda Afroza

Background: When breast milk is no longer enough to meet the nutritional needs of infants, complementary foods should be added to their diet. It is a very vulnerable period when malnutrition starts in many infants, contributing significantly to high prevalence of malnutrition in under-5 children world-wide. In Bangladesh, complementary feeding (CF) practices are not satisfactory.

Objective: The objectives of the study were to look into the feeding patterns of under-2 children and to identify the causes which lead mothers/ caregivers to practice inappropriate CF.

Methodology: This cross-sectional study was done in the Pediatric department of Sir Salimullah Medical College Mitford Hospital, Dhaka and in a private chamber from a district town of Bangladesh from October, 2011 to December, 2011. Four hundred mother-child pairs were enrolled by non-random convenience sampling. Different aspects of feeding practices (age of initiation of CF, type of first complementary food, current main complementary food and its quantity, and frequency of CF) were analyzed.

Results: Bottle feeding, fast foods and lack of proper family support were most important barriers ($p<0.05$). High rate of early initiation of CF was mainly due to mothers' perception that breast milk alone was not enough (81.8%) and main cause of late initiation was refusal of complementary foods by their babies (48.4%). Feeding practices were mainly influenced by relatives (25%), qualified doctors (15.3%), neighbors (14.5%) and mother-in-laws (13.5%).

Conclusion: Bottle feeding, fast foods and lack of family support were most important barriers. Early initiation of CF was mainly due to mothers' perception of inadequate breast milk and late initiation CF was due to refusal by the babies. Feeding practices were influenced by relatives, qualified doctors, neighbors or mother-in-laws.

Supervised Treatment of Tuberculosis in Children at the Outpatient Department of Mymensingh Medical College Hospital

ARM Luthful Kabir

1st International Scientific Conference
22-24 January, 1991, BCPS, Dhaka

Background: In order to ensure regularity of ambulatory treatment of new cases of chilhood tuberculosis, a supervised chemotherapy regimen was tried in 50 children attending consecutively at the children outpatient department (COPD) of Mymensingh Medical College Hospital.

Methodology: Initially tuberculosis was diagnosed on the basis of presenting features, history of contact with a tuberculous case, physical findings, positive BCG test/Manutoux test and rediological findings. They were treated with the available drugs at COPD for the conventional courses of time with few exceptions. They were supervised for monthly attendance, dosage of drugs and clinical improvement.

Result: Follow-up was regular only in 17 (34%) cases and irregular in 33 (66%) cases and drop out 9 (18%) cases. Dosage was found adequate in 22 (48%) cases and low dose in 24 (52%) cases,unknown in 4 cases. Thirty nine children (78%) showed improvement as evident by satisfactory weight gain on supervised treatment.

Conclusion: Meticulous follow-up is mandatory for successful chemotherapy in childhood tuberculosis.

Conference Presentation *10th Biennial BPA*

Clinical Pattern of Childhood Tuberculosis In A Referral Hospital : Study of 96 Cases

MN Islam, MA Halim, NC Saha, **ARM Luthful Kabir**, A Afroza

10th Biennial BPA,
15-17 November, 1991

Objective: Children admitted with tuberculosis into the department of Paediatrics, IPGMR during the period January 1990 - October 1991 were analysed for clinical pattern.

Results: Out of 96 cases, there were 44 (46%) cases of pulmonary TB, 16 (17%) cases of milliary TB, 13 (14%) cases of TBM, 11(11%) cases of tuberculous lymphadenities and 12 (12%) miscellaneous cases including 2 cases of tuberculosis predominantly affecting the liver. We like to highlight here two cases of hepatic tuberculosis for which we should keep ourselves vigilant in the diagnosis of tuberculosis.

Breastfeeding Counselling : An Essential Learning Skill for Paediatricians

ARM Luthful Kabir, M Quamrul Hassan, A K M Shahabuddin, Prof. M Q-K Talukder

11th National Conference BPA
April 2-4, 1993, Dhaka

Background: Breastfeeding is a behavioural issue. Often paediatricians come across mothers who are not able to breastfeed successfully. Helping such a mother needs counselling to change her behaviour.

Objective: The objective of this presentation is to discuss the need for and way of, brestfeeding counselling.

Methodology: It includes taking a good breastfeeding history through "Listening and learing skill", "Building Confidence and giving support"

Results: These stepwise methods of communication make lactation management easy and acceptable to mothers.

Conclusion: A good breastfeeding history through "Listening and learing skill", "Building Confidence and giving support". It is recommended that all the paediatricians should be equipped with breastfeeding counselling techincs to help mothers breastfeed successfully.

Conference Presentation *10th Biennial BPA*

Baby Friendly Hosptial Initiative: The Current Status In Bangladesh

AKM Shahabuddin, M Quamrul Hassan, **ARM Luthful Kabir**, M Q-K Talukder

6th Nutritional Conference
27-29 November, 1993, Dhaka

Baby Friendly Hospital Initiative (BFHI) is a recent strategy towards re-establishment of breastfeeding culture globally. As a signatory to Innocenti Declaration, Bangladesh is committed to promote all maternity health care facilities in the country into Baby Friendly Hospitals by the year 2000.

Workshops in 4 medical colleges in 1989, a National Conference in 1991 and the National Breast Feeding Day and Week on and from Aug 1, 1992 with the theme of BFHI, all these programmes created a good ground for BFHI. Government has identified 9 hospitals to be Baby Friently in first phase, where an 18-hour course on "ten steps to successful breastfeeding" had been provided to all level staff. The result is a miraculous change: bottles are disappearing from wards, more babies start breastfeeding earlier and are sustained on it exclusively. The international assessment of those hospitals began in Feb'93; one has been proposed for "BFHI award" and five for "Certificate of Committment".

Combined effort of Paediatricians and Obstetricians will make it possible to create a Baby Friendly environment throughout the country.

Clinical Features of Ascariasis In Hospitalised Children

ARM Luthful Kabir

8th Asian Congress of Pediatrics
6-11, February 1994, New Delhi, India

Background: Ascaris lumbricoides, the roundworm, is one of the largest parasites of man, probably infects one in four persons in the world. It mostly involves countries where the standards of public health and personal hygiene are low. The adult roundworm usually lives in the intestinal lumen without any significant symptoms. However, when aggregated into masses they may cause varied symptomatology. The study was undertaken to look into the clinical features of children with ascariasis.

Objective and Methodology: Seventy seven children aged 1 to 12 years, otherwise healthy, presenting with spontaneous explusion of worms were hospitalized. They were carefully examined for symptoms and signs of ascariasis by the author.

Results: Most of the explusion of worms were through mouth (56%) followed by per rectum (22%). Vomiting (70%), poor appetite (64%) and abdominal pain (62%) were the leading symptoms. Abdominal tenderness (36%), fever (27%) and distended abdomen (23%) were the common signs.

Conclusion: Children frequently present with abdominal pain, poor appetite and vomiting and in these children ascariasis should be considered before launching on some invasive investigation.

Census and Survey In A Small Community - Jalkuri Experience

AKM Fazlur Rahman, CA Kawser, **ARM Luthful Kabir**, M Shahidulla , M Quamrul Hassan, Nazneen Begum, Masroor-ul-AIam, Mahmud Hossain, AKM Shahabuddin, M Q-K Talukder

11 Biannual Conference, BPA
2-4 November, 1994, IPGMR, DSH, Dhaka

Background and Objective: Census and survey are important methods for collecting information from the community and is necessary for program planning of health care delivery. The paper describes the method of census and survey on socio-demographic and some selected health characteristics carried out in six-villages around Jalkuri hospital, a service and research center of the Institute of Child and Mother Health (ICMH) during May' 94 to July '94.

Methodology: Sixteen health workers were extensively trained for this purpose. Mapping of villages were done at first and then each village was delineated into a size of approximately 50 households. Listing and numbering of the households were done next in the process. A questionnaire was developed for data collection which was pre-rested for its validity, acceptability and finalized accordingly. All academic members of ICMH played supervisor role in all activities including checking of the code, manual data cleaning and range and consistency check. A quality control system was followed in the whole process. Before starting activities of the census and survey, community participation was ensured by a series of meeting with local people.

Results: A good response from the community was noticed during the time of census and survey. Total of 7545 households' /information were collected.

Conclusion: This methodology may be used for conducting and survey in any small community.

Socio Demographic Characteristics of The Population In The Catchment Area of ICMH - Jalkuri Hospital

MQ Hassan, CA Kawser, **ARM Luthful Kabir**, M Shahidulla, AKM Fazlur Rahman, Nazneen Begum, AKM Shahabuddin, MQ-K Talukder

11 Biannual Conference, BPA
2-4 November, 1994, IPGMR, DSH, Dhaka

Objective & Methodology: Six villages around Jalkuri Hospital, Narayangonj were covered through a census and survey and this paper presents the demographic characteristics of the 2920 families out of 7500 covered by this survey.

Results: There are 14624 family members (M:F = 1.12:1) in 2920 household with 5.l persons per household. Below 1, 5 and 15 years child constitute 2.1%, 11.7% and 39.3% respectively of total population. Women of reproductive age constitute 24.1%. There was 317 birth in last year (CBR 21.9) and 66 death (CDR 4.5). Of the death neonatal, infant and under-6 mortality constitutes 7.6%, 25.8% and 33% respectively of the total death. There was more death in female population (5.2/1000) than male population (4.1/1000). Only 31.3% are illiterate and another 32.8% has education below 5 years of schooling. Mean expenditure per family was 3026 taka/month (SD 1804) with 70% of the population spending less than 3000 taka/month. 78.4% of the family own their house with tin, clay and tin/straw as the commonest material for roof (88%), floor (81%) and wall (75%) respectively. Average floor area of the main living room was 18.6m^2. About 66% population uses unsanitary latrine like open latrine and 34% uses sanitary latrine. Though 100% population uses tube-well water for drinking but high percent of household uses pond/canal water for cooking (16%), washing utensils (48%) and bathing (57%).

Conclusion: Though this peri-urban community seems quite well-off than the national standard but the life style practice in different field is quite unhealthy and suggest need for health education to change the practice.

The Expectations and The Current Status of Baby Friendly Hospital Initiative

M Q-K Talukder, CA Kawser, **ARM Luthful Kabir**, Nazneen Begum, M Shahidullah, M Quamrul Hassan, AKM Shahabuddin

11 Biannual Conference, BPA
2-4 November, 1994, IPGMR & DSH, Dhaka

Background and Objective: The paper focuses on the expectations and the current status of Baby Friendly Hospital Initiative in the country. One of the global mid-decade goals for all countries was initially set to transform all the maternity facilities into baby friendly hospitals. In 1994, however, the Task force for child survival and development made a realistic recommendation suggesting to make as many hospital as possible baby friendly.

Methodology: In Bangladesh out of about 900 big and small maternity services centers, the mid-decade goal target has been set to make 162 into baby friendly. The process involves training of trainers (TOT), at least 4 in number from each hospital. The trainers then train all the maternity staff so that they successfully implement the ten steps. The TOT involves 22 hour course of which 10 hours of practical work in a maternity hospital is ensured. The training at the individual hospitals are of 18 hours duration. In many instances some experienced core trainers are sent to many hospitals to help in the training of the local staff.

Results: So far, out of 18 hospitals assessed, 16 have qualified as baby friendly hospitals. The whole process is demanding. However stringent time schedule has been done and now tried to be followed. This should lead to transform 50 hospitals into baby friendly by the end of 1994 and 162 in total by the end of 1995. Paediatricians have critical role to play in the whole process of baby friendly hospital initiative.

Conclusion: TOT on breast feeding is helpful for transforming maternity hospital into baby friendly hospital.

Nutritional Status of Under-6 Children and Coverage of Primary Health Care in a Rural Community

ARM Luthful Kabir, C A Kawser, M Shahidulla, M Quamrul Hassan, A K M Fazlur Rahman, Nazneen Begum, A K M Shahabuddin, M Q-K Talukder

Dhaka Congress, BCPS
December 20-25, 1994, Dhaka

Objectives : The aim of the study was to see the nutritional status and extent of primary health coverage of under 6 children around Jafkuri Hospital, Narayangonj.

Design : Census and survey conducted in a cross section of people comprising 14624 population having 2920 families.

Setting : Six villages around Jalkuri hospital; Jalkuri, Godnail, Delpara, Bhuighar, Nandalalpur, Pilkuni.

Subjects : Children population of 2006 below 6 years.

Outcome measures : Nutritional status by mid upper arm cericumfernce (MUAC), immunization status, attitude for seeking modern treatment, recent visit by health workers, vitamin A capsul (VAC) distribution.

Results: Children population below 6 years were 2006 (14%). There were 1002 (50%) male and 1004 (50%) female children. Immunization status was very much satisfactory with 82% coverage for BCG, 73% for third dose of DPT and Polio and 69% for mealses vaccination. The nutritional status as determined by MUAC showed 69% children having 13 cm. The attitude for seeking modern allopathic treatment of the population was however, low (32%) and the health coverage as determined by recent visit by health workers in the area was also low (31%). Vitamin A capsule distribution to this group of children was unsatisfactory (28%).

Conclusion: This again supports earlier observation that there is sub-optimal use of existing health care facilities. This can be improved by providing health care at door step rather than asking people to attend health care facility.

Meeting The Mid-Decade Goals for Child Survival: Indicators for Monitoring

M Q-K Talukder, C A Kawser, **ARM Luthful Kabir**, Nazneen Begum,
AKM Fazlul Rahman, M Shahidullah, M Quamrul Hassan, AKM Shahabuddin

11 biannual Conference, BPA
November 2-4 1994

The aim of the presentation is to discuss the indicators set to monitor the success of the programmes to meet the mid-decade goals. The mid-decade goals for child survival and development form part of the overall objectives of the World Summit for Children. Ten mid-decade goals are set by the Ministry of Health and Family Welfare. The ten goals are : immunization coverage of six antigens to 80% or more, elimination of neonatal retanus, reduction of measles mortality by 95% and measles morbidity by 90%, elimination of poliomyelitis, virtual elimination of Vitamin A deficiency, universal iodization of salt, achievement of 80% usage of oral rehydration therapy, making 162 hospitals and maternities baby-friendly, reduction of 1990 levels of severe and moderate malnutrition by one-fifth (20%) or more, and reduction of maternal mortality to 450 per 100,000 live births. For all these goals, specific indicators are developed by WHO and UNICEF. Each goal's indicators range from one to six and will be presented.

Paediatricians have positive contributions to make in achieving the mid-decade goals. A child survival development revolution for 1990s : Role of paediatricians

Child survival rate has increased rapidly after 1990 in many other countries of the world following improvement of health care system. But our country is still lacking behind in this field. Vital role of paediatricians of Bangladesh can only change the situation.

Following basic steps can be taken :

1. Examination of foetus before delivery by paediatrician and examination, assessment and checkup of newborn in the delivery room and determination of Apgar score.
2. Introduction of bio-chemical screening test at 4th & 5th days of life (e.g. Guthrie/heel prick).
3. Introduction of routine health surveillance system at the age of 6 weeks, 8 months, 21 months, 39 months and 5th years.
4. Introduction of better vaccination facilities like hepatitis B vaccine and immunization of unimmunized children beyond 1 year.
5. Improvement of breastfeeding by education and restricting the import of artificial milk.
6. Monitoring the growth of child in an integrated growth chart for weight, height and head circumference in Bangladesh standard.
7. Improvement of sanitary condition by education.

Neonatal Transfer

M. Shahidullah, CA Kawser, **ARM Luthful Kabir,** Quamrul Hassan

12th Biennial Conference, BPA
15-17 Ocotber, 1997, Pan Pacific Sonargaon, Dhaka

Perinatal Care System (PCS) is a broad term. PCS is based on a programme which deals with the care of high risk mothers and high risk babies. This programme is usually regionalized. Neonatal transfer is only one of the components of this PCS. Neonatal transfer (Neonatal transport) means transfer of a newborn baby from one place to another place, usually to referral centre where further management is offered. Neonatal transport can not be successfully established if it does not have any formalized approach. The establishment of this system began in early 70's. The need for its establishment was felt from different studies which showed that some preventable perinatal mortality was due to poor obstetric delivery service and non-existence of proper neonatal transfer system.

Proper neonatal transfer include:

(l) Referring hospital should have a policy which contains the criteria based on which will be decided which bady needs transfer.

(2) Knowledge about proper referral centre and availability of bed / cot.

(3) Knowledge about the best time of referral.

(4) Availability of transport team-its proper composition.

(5) Stabilization of the baby before transfer.

(6) Providing the informations about the baby with transport team.

(7) Getting the feedback from the referral hospital.

These well eventually result into a proper transfer of sick newborn baby and a better outcome to a referral centre.

Essential Drugs: Criteria of Selection, Rational Use and Application In Primary Health Care Setups

A Hannan, **ARM Luthful Kabir**, MQ Hassan, KK Talukder, MQ-K Talukder

12th Biennial Conference, BPA
15-17 Ocotber, 1997, Dhaka

Essential drugs are defined as those that satisfy the health care needs of the majority of the population. The World Health Organization's (WHO) concept of essential drugs is now twenty years old. Essential drugs should be available at all times in adequate amounts in the appropriate dosage form. The choice of such drugs depends on many factors such as pattern of prevalent disease, the treatment facilities, the genetic, demographic and environmental factors. Knowledge of the prevailing sensitivity patterns is of vital importance to the proper selection and use of antimicrobials and to the development of appropriate prescribing policies. WHO's model list has been adopted by numerous international and bi-lateral agencies that now include drug supply and rationalization of drug list, standardised and uniform treatment protocols and training programmes have been shown to be associated with rational use of essential drugs in primary health care.

Mineral Status in Relation to Rickets in Chakaria, Bangladesh

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7th Annual Scientific Conference (ASCON)
14-15 Feb. 1998, ICDDRB, Dhaka

Background: The rickets prevalent among children of the Chakaria region of Bangladesh is not usually associated with vitamin D deficiency. Therefore, Ca-deficiency would appear to be at least a predisposing factor in its aetiology. That rickets has emerged as a public health problem in Chakaria within the last two decades suggests that changes in food habits and/or environmental exposures may have contributed to the disease either by reducing Ca intakes (e.g. reduced access to Ca-rich foods) or use (e.g. increased exposure to such Ca-antagonistic factors as Al, Pb, Cd, F, Sr, Ba, low P, low-B). The Chakarian food system has indeed changed during this time: winter rice (requiring irrigation during the dry season) has been introduced; shrimp production in flooded paddy fields has increased; deep tubewells have been drilled to provide potable water.

Objective: To explore the aetiology of rickets in Chakaria and identify opportunities within the local food system to prevent the disease.

Methodology: Mineral analyses were done on samples of whole blood and foods collected from the Chakaria region in October 1997. Blood was obtained from children aged 36-98 months identified by their families as either rachitic (n=l 1) or unaffected (n=8), who were each given physical and radiographic examinations (results reported separately). Samples of drinking water from tubewell, cooking water (pond), and cooked and uncooked rice were collected from three households, one of which had rachitic children. Samples of other foods likely to be sources of Ca and other limiting nutrients (mungbean, grasspea, chickpea, Indian chickpea, cowpea, lentil, black gram, amaranth, red chillies, taro, a sea-fish, churie, shrimp, and faishya) were purchased from the market at Chakaria. Water pH was measured at the point of sampling; samples were held frozen (blood) or at ambient temperature (water), or dried (food) prior to analysis. Samples were digested with nitric-perchloric acids and analyzed for 20 elements (Pb, Cd, Cu, Zn, Co, P, K, Na, Mg, Fe, B, Mo, Ni, V, As, U, Cr, Al, Sr, and Ba) by inductively coupled plasma emission spectrometry.

Results: The results of the study showed blood mineral values for rickets cases and controls to be similar with the exception of P (serum: cases, 43 mg/L vs. control, 52 mg/L, p>.05; whole blood: cases, 216 mg/L vs. control, 235 mg/L, p>.05). All values in both pond and well water samples were within normal limits. All elements in the rice samples were within safe limits reported for plant foods; rice was very low in Ca (86 mg/kg as eaten). All elements in the local foods were within the normal ranges reported for these elements with two notable exceptions: amaranth and shrimp, both containing high concentrations of almost all elements (amaranth, mg/kg dry weight: Ca, 26,947; Al, 1455; Pb, 1.5; Sr, 129; Ba, 32; Cr, 9.8; V, 3; As, 0.2; shrimp, mg/kg dry weight: Ca, 37,278; Al, 209; Pb, 0.3; Sr, 322; Ba, 34; V, 0.5; As, 4.3).

Conclusion: The results do not indicate wide exposure to antagonists of Ca use, but point to a food supply generally low in Ca.

Do Our Parents Abuse Their Children?

ARM Luthful Kabir, Nazneen Kabir, MA Mannan, Faridul Hassan, Delwar Hossain, Zahid Arefin

9th International Conference. Safe Community
Feb 26-28, 1999, Dhaka

Introduction: Child abuse is any maltreatment of children or adolescents by their parents, guardians or other care-takers. The problem of child abuse is widespread and worldwide. The spectrum of child abuse includes physical abuse, emotional abuse and failure to thrive, sexual abuse, poisoning and neglect. More than one form is found in one case. They are all symptoms of disordered patient-child relationship. Physical abuse can range from minor bruises to fatal subdural haematomas. Severe verbal abuse is within the scope of emotional abuse. Child abuse is common in poverty and crisis relating to the use of money, in certain strict religious groups, in parents having poor impulse control, in marital crisis and in families of military personnel.

Objective: To look into the parental abusive behaviour towards their children.

Methodology: Two hundred mothers who attended the hospital OPD of the Institute of Child and Mother Heath (ICMH) were studied for their abusive behavior towards their children of 2-15 years. A structured questionnaire was used to take face to face interview of the mothers by the authors.

Results: The mothers were mostly from poor socioeconomic background. More than 77% mothers were housewives, 13.5% mothers were service holders and 6% housemaids. The mean year of education of mothers was 5.29 years (SD +/- 4.87). About half (49.5%) of the family had either 'balance income' (just could maintain family expenditure without resorting to taking loan) or 'deficit budget' 28% (family who had to take loan for subsistence at the end of the month). There was history of 'ever rebuke' (life time rebuke) in 89% and 'recent rebuke' (rebuke in last 7 days) in 71% cases by the mothers. Eighty four percent mothers gave history of 'ever beating' (physical torture in life time) and recent beating (physical torture in last 7 days) in 60.5% cases. Fathers were found abusive to their children (either rebuke or beating) in only 43% cases. When compared with fathers, it was found that mothers were more abusive (79%) to the children than their spouses (8.5%). Mothers used hands in 49.5%, hands and an instrument (like a cane) in 31% and an instrument in 3.5% cases. The causes of parental abusive behavior were being 'naughty child' 67%, 'not studying' 50.5%, 'eating problem' 30.5%, 'disobedience' 25% and much playing 19.5%. It was observed that children of both sexes were equally vulnerable to abuses when recent history of beating was considered (p 0.87) but male children were more at risk of beating (OR 2.18, 95% CI 1.01-4.71) when lifetime beating taken into account. Children were more vulnerable to beating in poor families than rich families (OR 3.60 95% CI 1.79-7.25). The education of mothers had nothing to do with the increased rate of beating in children (OR 1.67, 95% 0.94-2.97).

Conclusion: Our parents, particularly the mothers are apparantly very much abusive to their children. Children are more vulnerable to assault in poor families. The causes of the abusive attitude of our parents are the innate and inherent manners of their children. further study is needed to look into the causes and nature of abusive behavior of our parents.

Childhood Tuberculosis: Efficacy of Intermittent Short Course Chemotherapy

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7th Workshop on Asthma and COPD
6-7 May 2003, NIDCH, Dhaka

Objective: A prospective study was conducted to understand the efficacy, compliance and cost effectiveness of short course intermittent chemotherapy for the treatment of childhood TB (8 months - 13 years) diagnosed by set criteria during a period of ten months (May 1998 to February1999) at Dhaka Shishu Hospital TB Follow up Clinic.

Methodology: Twenty five newly diagnosed children (study group) suffering from TB (PTB 11; 44.0 %, TBL 6; 24.0 %, Disseminated TB 8; 32.0%) were treated with rifampicin (10-20mg/kg), isoniazid (10-15mg/kg) and pyrazinamide (25-35mg/kg) daily for two months followed by rifampicin (10-20mg/kg) and isoniazid (10-15mg/kg) twice weekly for next four months. The cases were followed up monthly and drugs were given free of cost.

Results: Most of the patients were malnourished (68%) and belonged to poor socioeconomic class (80%), almost half living in urban slums (44%). About half of them had history of contact with adult TB patients, mostly among family members. The common clinical manifestations were fever with weight loss (88%) and cough (72%). In PTB 81.2% ($p<0.05$), in lymph node TB 66.6% ($p>0.05$) and in disseminated TB 37.5% ($p>0.05$) patients improved with chemotherapy. Satisfactory compliance about drug intake (80%) and regularity in follow up (88%) was also observed. The total number of doses was reduced to 94 instead of 180 and the treatment cost was only Tk350/= per patient.

Conclusion: The study concluded that intermittent short course chemotherapy is quite effective only in PTB without following DOTS strategy and treatment cost can be reduced significantly.

Magnitude and Determinants of Child Deaths Due to Drowning in Bangladesh

Aminur Rahman, Fazlur Rahman, Shumona Shafinaz, Michael Linnan, Morten Giersing, Pravat Chandra Barua, **ARM Lutful Kabir**

Safe Com 2004
February 15-17, 2004, ICMH, Dhaka

Introduction: Drowning is considered as the leading cause of death in children of the developing and developed world. However, the importance of drowning is not well recognised as a public health problem in many developing countries including Bangladesh. There is no drowning prevention programme in the country which is mainly due to lack of information regarding drowning deaths.

Objectives: The objective of the study was to determine the magnitude and risk factors of drowning of children under 18 years in Bangladesh.

Methods: A population-based survey was conducted in between November 2002 and August 2003 in Bangladesh. Nationally representative data were collected from 171,366 rural and urban households comprising of a total of 819,429 populations. Mothers/head of households were interviewed with a screening form to collect information of the household that included information about the number of deaths in the household in the last 2 years and number of sick (ill or injured) persons in the household in the last 6 months. If any deaths were identified a standard verbal autopsy form and in case of any morbidities a standard verbal diagnosis form were administered to determine the cause of death or morbidity. When any injury deaths/morbidities were detected, injury mortality/injury morbidity questionnaire) were used to gather detailed injury related information.

Results: The incidence of drowning among children under 18 was 26.4 per 100,000 children-year. The highest incidence of drowning was observed among 1-4 year children (87.9 per 100,000 children-year). The proportional mortality rate due to drowning in children 1-4 years was 26.2%. More than 50% of the drowning deaths occurred in the ponds. No definite seasonal pattern of childhood drowning was observed. About three quarters (73.8%) of the drowning deaths occurred when the mothers were involved in household chores. About half of the drowned children were found in water between 1200 hours and 1600 hours. Higher risk of drowning of children was observed among the mothers who were illiterate than those who had secondary level education (OR 1.7; 95% CI 1.0-2.8). Mothers who had 5 or more children had greater risk of dying due to drowning (OR 1.9; 95% CI 1.1-3.3).

Conclusion: Drowning is one of the major causes of childhood mortality in Bangladesh. Illiterate mothers education and higher number of children of mothers were risk factors identified for drowning in children.

Childhood Tuberculosis: Newer Diagnostic Criteria And Management

Mahfuza Shirin, Lutfun Nahar, Nilufa Akhter, M Monir Hossain, Khandker Rokonuddin, **ARM Luthful Kabir**, Md Ruhul Amin

8th Workshop on Asthma and Chest Disease
3-4 May 2004, NIDCH, Dhaka

Background : Tuberculosis is one of the leading infectious killer diseases in children. WHO has declared TB to be a global health emergency in April 1993. Globally, tuberculosis accounts for 8 million new cases and 3.8 million deaths annually. According to WHO estimate more than 1.3 million cases and 450,000 deaths occur annually in children from TB. In the past decade, out of 88 million cases of TB globally, 15 million were children, 5 million of whom died. Bangladesh is the fourth of the 22 countries highly burdened with tuberculosis where WHO pay special attention. In Bangladesh, about 300,000 patients suffer and 70,000 patients die of TB every year.

Directly observed Therapy, short course (DOTS) is a brand name for WHO strategy for TB control. Bangladesh is implementing DOTS since 1993 and serving in all Upazilla since 1998. In 1993 National Tuberculosis Programme {NTP) fixed a target of detecting 70% smear positive cases and curing 85% of the detected cases. NTP of Bangladesh is considered to be a success. In spite of its success only 30% of total TB patients are diagnosed in TB Centers and out of them 2% are children (14 years and less).

Diagnostic problems of childhood TB

The diagnosis of tuberculosis in children is often difficult because children rarely produce adequate specimen and radiographic imaging studies may either be unavailable or have uncertain results. MT (Mantoux test) remains an important tool for diagnosis of tuberculosis infection and disease. Serological tests are not commonly used because none of the tests have desirable sensitivity and specificity. Newer tests are ADA activity, plasma soluble CD30 (a marker of type 2 cytokines producing cells) and (a tumour marker). Traditionally, culture has been done on solid (Lowenstein Jensen media) or liquid media (Kirchner and various Middlebrook formulations), usually take longer time (4-6 weeks). New fully automated non-radiometric media like MB/BacT (Biomerieux), BACTEC 9000 (Becton Dickinson) and the Mycobacterial Growth Indicator Tube (MGIT; Becton Dickinson) systems take roughly 14-21 days to isolate mycobacteria from specimen.

Polymerase chain reaction (PCR) has been incorporated as a diagnostic tool for the diagnosis of tuberculosis. The benefit of rapid results and greater sensitivity compared with traditional microbiological methods makes PCR a suitable technique in the diagnosis of childhood tuberculosis, especially when diagnosis is difficult or when urgent diagnosis is needed. Tests based on nucleic acid amplification are a promising advance. Poor technical expertise and high cost are limiting factors for its use in children with tuberculosis.

WHO recommended scoring system for the diagnosis of childhood TB

In a developing country like Bangladesh, different expensive serological tests, PCR, rapid culture technique, even culture in Lowenstein-Jensen media are not possible. To diagnose tuberculosis in children many scoring system have been practiced globally. The basis of a scoring system is the careful and systematic collection of diagnostic information.

Infant and Young Child-feeding Practices in Urban Areas of Bangladesh

M.Q. Hassan, A. Hannan, **ARM Luthful Kabir**, P.C. Barua, A.K.M.F. Rahman, A. Rahman, K.K. Talukder, S. Ahmed, F. Bilkes, and M.Q-K. Talukder

8th Commonwealth Congress on Diarrhoea and Malnutriton
February 6-8 2006, ICDDRB, Dhaka

Background: Knowledge on feeding practices of infant and young children (IYC) is crucial for undertaking or improving health and nutrition programmes in a country or community. The health and nutrition status and infant and young child feeding (IYCF), one of the determinants of health and nutrition, is not well-studied in urban Bangladesh.

Objective: The study was conducted (a) to document the knowledge, attitudes, and practice of urban mothers/caregivers of 0-24 month(s) old infants and young children regarding breastfeeding (BF) and complementary feeding (CF) and (b) to identify the barriers of optimum IYCF practices.

Methodology: A cross-sectional survey was conducted among mothers/caregivers of 0-24 months old infant and young children in 4 metropolitan cities. In total, 6,082 respondents were identified through multi-stage cluster sampling. Interviews with a structured questionnaire, participatory rural apprisal (PRA) technics, and Likert scale for attitude assessment were used for collecting data.

Results: This is the largest study in urban Bangladesh on IYCF situation. The prelacteal feeding rate was 71%, onset of BF within half an hour was 17% and that within 24 hours was 79%. Eleven percent expelled colostrum before BF. Exclusive BF rate at 5 and 6 months were 20% (95% CI 16-24.5) and 7% (95% CI 4.7-10.6). About 60% of mothers initiated CF before 6 months of age. One-third of children were given BF and CF with feeding bottles. Knowledge, attitudes, and perceptions of caregivers on IYC feeding were varied and deviated; but most of them had positive attitude towards exclusive BF, family food as ideal CF, continued BF for 2 years and need for fathers' active role in CF.

Conclusion: Exclusive BF rate is very low and CF is inappropriate in onset and inadequate in quality. Based on existing positive attitude of caregivers and emerging urban primary healthcare infrastructure, effective communication strategy should be adopted to improve the IYCF situation.

Baby Friendly Hospital Initiative (BFHI) Model Project in Bangladesh. Experiences on Sustainability

MQ Hassan, **ARM Luthful Kabir**, Nazneen Kabir, F Islam

15th Biennial Conference and indo-Bangladesh Friendship Society meet 2006
16-17 February 2006, BFCC, Dhaka

Background: Since 1992, more than 400 maternity facilities have been designated as Baby Friendly in Bangladesh as per Baby Friendly Hospital Initiative (BFHI) international guideline. But questions are often raised on their sustainability. Following a national assessment of representative samples of baby friendly hospitals, a model project has been undertaken in 4 big hospitals in Dhaka and Chittagong to strengthen their Baby Friendly activities.

Objective: The objective of the project was to analyse the barriers to sustainability of BFHI, to assess the improvement following a model of changes in BFHI activities and to identify the key improvement factors transferable to other hospitals.

Methodology: Following baseline qualitative and quantitative assessment of 4 big national hospitals, a package of improved BFHI activities has been formulated after consultation with all the relevant stakeholders. This included activation of BFHI committee, training to all level staff including aya, wardboy, provision of simple service manual, communication materials, take away print materials for the mothers, record keeping of breastfeeding indicators and reporting, internal and external monitoring involving govt functionaries, integrating with other MCH services of the hospitals like EPI, CDD etc, establishing Lactation Management Services. After one year, follow up assessment as been done to see the change and identify the positive elements of the package.

Results: Activation of BFHI committee has been found critical for sustaining the BFHI. Short term low cost refresher training by local faculties, reader friendly manuals, involvement of aya, wardboys has beneficial effect. Mothers like take away pictorial based print materials. Record keeping, reporting are difficult to implement. Monitoring of any intensity has positive effect on running the programme. Antenatal counseling and Lactation management centre are vital to BFHI programme. Reassessment of BFHI process may be helpful.

Conclusion: BFHI can be sustained through its need based improvement. Key elements are: BFHI committee, refresher training, antenatal care, lactation management centre, record keeping, monitoring. Involvement of government functionaries has no alternative in sustaining BFHI. Sustainable BFHI programme has great effect of Infant and Young Child Feeding Practice in the community.

From Clinician To Community: A New Approach For Case Detection of Childhood TB From Bangladesh

Shakil Ahmed, **ARM Luthful Kabir**, Md. Ruhul Amin, Md. Abid Hossain Mollah, Mohammod Shahidullah

1st South Asia Paediatric Association (SAPA) & 18th Bienneal BPA Conference
6-7 April, 2014, Ruposhi Bangla Hotel & BSMMU, Dhaka

Approach to increase case detection remains a challenge especially in High Burden Countries (HBCs). Of many reasons, lack of knowledge, clinical diagnostic skills of primary care physicians and community health care workers is one for the low case detection rates of Childhood tuberculosis (CTB). Case detection rate in Bangladesh is 2.65-3% (2011-2013); WHO estimates that it should be 6-10% of total TB cases load. Moreover, data shows case detection rate in the community (e.g. UHC) is low and most of the cases are detected in the tertiary centers or district hospitals in Bangladesh. To overcome this Bangladesh has developed a local capacity development mechanism to train primary care physicians and health workers on CTB in conjunction with the National TB control program. For this program two training books have been developed, namely Childhood Tuberculosis: Training Manual for Doctors- Participants Handbook (Page No. 267) and Childhood Tuberculosis: Training Manual for Doctors- Facilitators guide (Page No. 266). Moreover, one flip chart has also been developed to train the health Care Workers at the Upozilla Health Complex (UHC). Al these training modules developed by using local case records, information and data. Training events are conducted at Dhaka, districts and UHC. The training is conducted in districts and UHC by local trained experts. The training is 4 (four) days for doctors and one day for the health care workers.

To date, 321 physicians have been trained from different districts and medical institutes of Dhaka division and 390 health care workers has been trained at 5 (five) UHCs of Dhaka and Gazipur. The program, in the next four months, will be rolled out to train a total of 550 primary care physicians and 7465 primary health care workers in 17 districts of Dhaka division. Initial pre- and post-test results of doctors showed statistically significant ($p<0.001$) increase of knowledge. To date this is the largest national childhood TB training program in a HBC. This local experience, gained in Bangladesh, is of great value to other HBC with a low CTB case detection rate.

Increase of Case Detection of Child TB Through Capacity Building

Shakil Ahmed, M Ruhul Amin, **ARM Luthful Kabir**, Md. Abid Hossain Mollah, Masuda Mohsena

4th Child Pulmocon
21 November, 2015, KIB, Dhaka

Background: Diagnosing child TB is a challenge in 22 High Burden Countries (HBCs) including Bangladesh. WHO estimates the case detection rate should be 6-10% of total TB cases. Recent publication shows it can be 4-22%, with sporadic reports form HBCs up to 25%.

In Bangladesh, case detection was 3.1% in 2011, 2.85% in 2012 and it was 2.74% in 2013. Moreover, case detection rate in the sub-district hospitals (Upazila Health Complex-UHC) were even lower than the national average. One of the important reasons is lack of clinical skills of doctors and awareness of health care workers at these community hospitals.

Program Intervention: To develop capacity among these groups of stakeholder, Bangladesh have developed generic training modules, training video, flip chart and other training aids between 2012-13. Capacity building program was conducted between November 2013-July 2014, with support from USAID and National Tuberculosis Control Program (NTP) with technical assistance from Bangladesh Pediatric Association (BPA). Total 1181 doctors and 8345 health care workers have been trained on child TB in 17 districts and 122 sub-districts of Dhaka Division. Training methodology has been highly appreciated by the participant. Pre- and post-test analysis showed statistically significant ($p<0.001$) improvement of knowledge of the participant across the line (irrespective of age, qualification and portfolio).

Impact: Case detection rate in Dhaka Division has raised in 2014 and 2015 till 30th June. The detection rate in Dhaka division was 3.26% (2010), 3.74% (2011), 3.60% (2012) and 3.84% in 2013. In 2014 it raised to 4.31%. Absolute number of cases increased by 25% from 2013 to 2014 (from 2299 to 2981). In 2015 till 30 June, number of child TB cases detected was 1910 (2981 in 2014), also shows increasing trend. Except other division was almost static in child TB case detection in 2014 and 2015.

Conclusion: Since no other intervention was undertaken during this period, a modular based capacity development of the doctors and health care workers found to increase detection rate of child TB in Bangladesh.

Laughing Lecture on Child Health

ARM Luthful Kabir

20th National Conference 2017
Bangladesh Paediatric Association
Cox's Bazar

Background: Counseling in clinical pediatric practice is cheerless and hopeless in most of the time. There is lot of scope to change the attitude of the pediatricians towards positive and promising counseling.

Purpose: To make parents aware about common health issues and problems of their children through dissolving into laughter.

This is a unique and unmatched documentary (Shishu-O-Hashi) of the frank and forthright deliberations of the parents while describing and detailing the common health issues and problems of their children in a private chamber of a Pediatrician for long 25-years. The myriads of dialogues had to be documented, sorted, compiled and composed to be drafted for final version. The faithful and factual dialogues of the parents are very much humorous and hilarious that one can't help laughing implying the idiom -"Truth is stranger than fiction".

Parents would know the characteristics of children, their growth, development, feeding, care, common problems, common diseases, complicated diseases, and mental problems. Also parents would perceive the symptoms, signs, nature and future of the diseases affecting their children. The immediate reaction and rejoinder of the pediatrician in response to the parental description can be made helpful, useful and delightful. Parents' undue strain and stress can be allayed in most of the cases and this is the beauty of the book. Moreover, this also entails the opportunity of realizing the practice of a bad doctor and that of a well-liked doctor.

This laughing lecture provides us with the opportunity to counsel parents about common child health issues and problems through interesting and entertaining interactions.

Knowledge, Attitude and Caring Practice of Parents having a Child of Down Syndrome – A Study of 50 Cases

Shahnewaz Akter, **ARM Luthful Kabir**

Introduction: Down syndrome or trisomy 21 is a genetic disorder caused by the presence of all or part of an extra 21st chromosome. It is named after John Langdon Down, the British doctor who first described it in 1866. This is the most frequent trisomy in human. The condition is characterized by a combination of major and minor differences in body structures. The incidence of Down syndrome is estimated at 1 per 750 births. Maternal age influences the risk of conceiving a baby with Down syndrome. We do not know the perception of the parents, their attitude towards the child and also the health seeking behavior after having a child with Down syndrome.

Objectives of the Study: To study the knowledge and attitude of parents and the practice of parents in regard to rearing the child and health seeking behavior of parents.

Study design: Descriptive cross sectional type of study.

Setting: This study was conducted at the outpatient, inpatient and special care centre (SCDDMC) of Institute of Child and Mother Health (1CMH), Matuail.

Procedure: Clinically diagnosed cases of Down syndrome presented at the aforesaid centers (OPD, IPD and SCDDMC) were enrolled into the study after taking verbal/written consent of the caregivers. Face to face interview was taken for taking detailed history. The child was examined thoroughly for eliciting physical findings. All the relevant history and clinical findings were documented in a structured pretested questionnaire.

Results: Mean age of the patients was 27.1 ±37.4 months; male female ratio was 1.6:1. Mean maternal age was 30.1±7.7 years and mean paternal age was 38.9±9.1 years. On mentioning specific features, 72% parents noticed some abnormality in their child but only 46% parents brought their children to any Health care professionals (HCP) for these problems. Mean age of bringing to any HCP was 17.42 months and 62.8% were previously diagnosed as Down syndrome, among them only 70.4% were counseled about the child's condition. Parents taking any-extra care for their children were 58%. Among the physical findings upslanting palpebral fissure, epicathic fold, hypotonia , clinodactyly low set ears, flat nasal bridge ,flat occiput, short neck, protruded tongue, wide gap between 1st and 2nd toe, uni or bilateral simian creases were found in >50% cases. Lower respiratory tract infection (LRT1) as a whole was the commonest presenting feature 46(92%), followed by developmental delay 48(96%) and mental retardation /global delay in 28(56%) cases. CHD was present in 48% cases and ASD secundum was the commonest cardiac abnormality 45.8%, followed by VSD in 29.2% on echocardiography. Karyotype reports were available in 24% cases. Trisomy 21 was the commonest cytogenetic abnormalities 83.3%. Mosaic and translocation were found in 8.3%cascs each.

Conclusion: Down syndrome cases were observed to attend late in health facility (17.4±29.8 months).Parents were found to have advanced age (mean age of father 38.9 years and mother 30.1 years) at the time of child birth. The children with Down syndrome had the typical features like dysmorphic fades (100%) and hypotonia (92%) and developmental delay (96%). Free trisomy 21 was the commonest cause (83%) of Down syndrome in the studied cases. Mothers were aware about some abnormality (floppiness 86% and poor neck control 72%) in the children with Down syndrome but were unconcerned about immediate medical attention due to ignorance about the gravity of the disorder. The cause of seeking medical attention was due to LRTI (bronchiolitis and pneumonia). The counseling of parents by the Health care professionals (HCP) was not appropriate as to the nature of the disorder (developmental delay, needing special care, speech problem etc.) and next course of action.

Association of Consanguinity between Parents and Occurrence of Adverse Health Effects in their Children

Sabrina Farah Mouree, **ARM Luthful Kabir**

Background: Consanguineous marriages have a relatively higher risk of producing offspring with genetic damage than that of the general population. Accordingly, the occurrence of genetic diseases should be higher in consanguineous marriages. However, there has been no study so far to address this issue in our country. This study was an attempt to clarify the role of consanguinity as a risk factor in the occurrence of genetic diseases.

Objective: To measure the association of consanguinity between parents and occurrence of adverse health effects in their children.

Methods: This was a case-control study. Cases were having selected adverse health effect/effects and controls were having no selected adverse health effect/effects. This study was done in the Department of Pediatrics, Bangabandhu Sheikh Mujib Medical University (BSMMU), Department of Pediatrics, Dhaka Shishu hospital and Department of Pediatrics, Institute of Child and Mother Health (ICMH), Dhaka during August 2010 to March 2011. Any pediatric patient who had one or more of the following criteria/diseases was determined to have adverse health effect: 1.Any autosomal recessive disorder (diagnosed or suspected) 2.Neurologic diseases or manifestations, e.g. Seizure disorders (which are not infectious origin/due to head injury), Developmental delay (exclusion of familial and maturational delay), Neurodegenerative diseases, Neurometabolic diseases, Cerebral palsy etc., 3. Metabolic disorder (diagnosed or suspected case), 4.H/O LBW (IUGR), 5.Congenital birth defects, 6.Congenital heart disease (diagnosed or suspected), 8. Congenital hypothyroidism, 8.Any syndrome 9.Any other complex or uncommon presentation. As a working definition, unions contracted between persons biologically related as first and second cousins will categorized as consanguineous.Age and sex were matched in case and control group.

Results: A total 384 patient were included (192 cases and 192 were controls). Maximum of the study patients were below 1 year in both groups, which was 43.2% and 43.8% in case and control group respectively. Presence of parental consanguinity was 33.8% in case and 12.5% in control group. This difference was statistically significant ($p<0.05$; OR 3.6; 95%CI: 2.1 to 6.0).First degree consanguinity was more common in both groups. Presence of parental consanguinity increases the risk ($p<0.05$) of having more than one child to be affected with adverse health effects.Parental consanguinity was significantly associated with neurometabolic diseases; neurodegenerative diseases (other than SSPE); Storage and metabolic disease such as Glycogen storage disease, Mucopolysaccharidoses, Suspected metabolic diseases, Neonatal intrahepatic cholestatic jaundice (due to suspected metabolic cause); Beta thalassemia major; only developmental delay; Congenital adrenal hyperplasia; Congenital Hypothyroidism and Friedreich ataxia. No significant association was found between parental consanguinity and HbE beta thalassemia, Birth defects, Wilson disease, Epilepsy / Seizure disorder, Febrile convulsion, Cerebral palsy, Congenital heart diseases, Low birth weight and Down syndrome.

Conclusion: Consanguinity between parents increases 3.6 times more chance of developing adverse health effects in their children ($p<0.05$). Parental consanguinity was significantly associated with neurometabolic diseases; neurodegenerative diseases, Storage, metabolic disease, Neonatal intrahepatic cholestatic jaundice (due to suspected metabolic cause); Beta thalassemia major; only developmental delay; Congenital adrenal hyperplasia; Congenital Hypothyroidism and Friedreich ataxia. Among these, parental consanguinity was more frequent in neurometabolic diseases.

Pattern of Atopy in Childhood Nephrotic Syndrome : A 50 Cases Study of 50 Cases

Sabiha Shanta, **ARM Luthful Kabir**

Background: Idiopathic nephrotic syndrome is a common renal disease in children. It is a major contributor to the workload of pediatric nephrologists. It is an immune mediated disorder of kidney. Many children with nephrotic syndrome present with atopic disorders. Numerous reports have shown a strong association between idiopathic nephrotic syndrome and atopic disorders.

Objective: This study was aimed to evaluate the association of atopic disorders (asthma, allergic rhinitis, atopic dermatitis, allergic conjunctivitis) with childhood idiopathic nephrotic syndrome.

Methods: This was a case control observational study, conducted in the pediatrics department of Sir Salimullah Medical College and Mitford Hospital from January 2012 to December 2012. Fifty children of idiopathic nephrotic syndrome from 2-10 years of age with first attack (18), infrequent relapse (24) and frequent relapse (8) nephrotic syndrome were included in the study. Children with nephrotic syndrome having haematuria and hypertension were excluded. Age and sex matched controls were taken from pediatrics indoor and outdoor who attended for minor illness (viral fever, enteric fever, upper respiratory tract infections, UTI, febrile convulsion, picky eater). In this study asthma, allergic rhinitis, atopic dermatitis, allergic conjunctivitis was defined according to International study of asthma and allergies in childhood (ISAAC) protocol: Asthma- recurrent (≥ 3times) wheezy respiratory distress in life, allergic rhinitis- symptoms of nasal irritation, runny nose, nasal blockage, and sneezing with at least 2 or more of these symptoms lasting more than an hour in a day on most of the days, atopic dermatitis- dryness of skin, intense itching or lichenification with excoriation persists at least 6 months or more with wax wane characteristics, allergic conjunctivitis- sudden lacrimation with itchy red eyes after exposure to pollen or allergen usually associated with rhinitis. Data were analyzed by using SPSS program. Chi- square test was used to compare data between two groups and a p value <0.05 was taken as significant.

Results: Mean age of patients of this study was 5.32±2.88 years and 5.34±2.87 years in case and control group respectively. Majority of patients (60%) were in 2-6 years age group. Male female ratio was 1.7: 1 in both groups. A history of at least one atopic disorder was present in at least one first degree relative in 28% cases with nephrotic syndrome and 8% cases of control (p 0.002). Noted atopic disorders in first degree relatives were asthma 14% vs. 4% (p 0.081), allergic rhinitis 20% vs. 8% (p 0.085), atopic dermatitis 4% vs. 0% (p 0.153) and allergic conjunctivitis 4% vs. 0% (p 0.153) in cases and controls respectively. A positive history of any atopic disorder was present in 46% cases and 20% controls (p 0.003). Atopic disorders were asthma 42% vs. 20% (p 0.017), allergic rhinitis 30% vs. 10% (p 0.012), atopic dermatitis 0% vs. 2% (p 0.314), allergic conjunctivitis 0% vs. 2% (p 314) in cases and controls respectively. Mean age of onset of first attack of wheeze in atopic cases of nephrotic syndrome group was 30.08 ± 35.77 months and 46.6± 42.65 months in control group. However the difference between two groups was not observed to be statistically significant (p 0.257). No significant difference in incidence of atopic disorder was found between first attack frequent relapse and infrequent relapse (p 0.26).

Conclusion: The children with idiopathic nephrotic syndrome are significantly prone to have atopic disorders. Children with idiopathic nephrotic syndrome have significant higher incidence of bronchial asthma and allergic rhinitis in comparison to age and sex matched controls. Mean age of onset of first wheeze was almost similar in children with nephrotic syndrome and age and sex matched controls.

Non Respiratory

Nutritional Status of Picky Eaters: A Study of 50 Cases

Rana Kumar Biswas, **ARM Luthful Kabir**

Objective: The present study was intended to compare the nutritional status and daily calorie consumption among children with and without picky eating behavior.

Patients & Methods: The present study was carried out in the Department of Pediatrics, Sir Salimullah Medical College & Mitford Hospital, Dhaka and private chamber of paediatrician, general physician over a period of 6 months from July 2013 to December 2013. The study population comprised of cases (n = 50) and controls (n = 50). The case was defined as a child who does not eat anything or take one or two favorite foods as explained by the parents in an otherwise healthy child, while a control was defined as a child without having picky eating disorder. The outcome measures were nutritional status (in terms of wasting, stunting and BMI) and one day (previous day) calorie consumption.

Result: Thirty percent of the parents of case group complained that their children were not growing well as opposed to only 4% of the control group (p = 0.017). Complaint of abdominal pain was considerably higher in the former group than that in the latter group (p = 0.070). The history of forceful feeding was present in 20% of the cases compared to none in the controls (p = 0.278). The mean 24 hours intake of calorie was lower in the case group than that in the control group, but the difference did not reach the level of significance (p = 0.087). In terms of nutritional status very few children (8%) with picky-eating behavior were wasted (low weight-for-height) (p = 0.181). None of the children in either group was stunted (low height-for-age). However, 26% of the picky-eaters were underweight in terms of BMI compared to 7% in the controls, but the difference was not statistically significant (p = 0.369).

Conclusion: The study concluded that the children with picky eating behavior are almost comparable to their control counterparts in terms of nutritional status (wasting, stunting and BMI) and calorie consumption.

People's Preception about Childhood Nephrotic Syndrome

Abu Sayed Miah, **ARM Luthful Kabir**

Background: The perception of the people in the community about nephrotic syndrome is varied. This was not previously studied in Bangladesh.

Objective: To know the Peoples' perception about childhood nephrotic syndrome.

Methods: A cross-sectional study was conducted in the inpatient department of pediatrics, Sir Salimullah Medical College and Mitford Hospital (SSMC) for 06 months (From November 2013 to April 2014). Purposively 50 children with diagnosed case of nephrotic syndrome were included for the study. Four groups of people were interviewed, e.g. father, mother, one relative and one neighbor/attendant of adjacent bed patient. Total 200 persons were interviewed {father-50, mother-50, relatives-50 (Uncle, Aunt, Brother, Sister, Grandfather, Grandmother), neighbor-18, attendants of adjacent bed patient-32}. A semi-structured questionnaire was developed for this purpose. The investigator collected data through face-to face interview in the hospital and telephonic interview from neighbors. Data were analyzed with the help of software SPSS version 16.0.

Results: Among the patients, 2-6 years age group were 60.0% and 7-11 years age group were 40.0%. Seventy two percent patients were male. Among all patients 20(40%) were first attack and 30(60%) were relapse case. Among the respondents, 45.5% were within 28-37 years age, 30.5% were 18-27 years age. Majority of the respondents were illiterate (32.0%), primary education completed (31.5%), secondary education (27.0%), higher secondary (5.5%), graduation and above only (4.0%).Ninety percent respondents did not know the name of the disease (Nephrotic syndrome). Majority (96.5%) of respondents were informed about the disease by doctors. Ninety five percent respondents had idea that the disease involved the kidneys. Ten percent respondents knew that kidney acts as both blood purifying organ as well as urine producing organ. More than 50% respondents had idea that the disease was caused by infectious agent and other 45.5% had no idea about the cause of the disease. Most of the respondents (95.5%) knew about facial swelling, eye swelling (85%), body swelling (94%) and scanty urination (86%).Ten percents knew that the disease is cured with medication and there is a tendency for recurrent attack. Sixty six and half percent respondents thought that kidney remains healthy, only 14.5% thought that kidney is damaged by the disease. Out of 200 attendants, 102 knew the procedure of urine testing, among them 72.5% rightly knew the procedure. Perception about passing 'white element' (albumin) in urine was significantly different between first attack and relapse cases (p=0.02). Perception about management of the disease between first attack and relapse was statistically significant (p=0.00). Perception about side effects of the drug (prednisolone) among attendants of first attack (16.7%) and relapse (83.3%) were highly significant statistically (p=0.00). Perception about complications of the disease among first attack and relapse was not statistically significant (p=0.106). Perceptions about special diet for the disease and follow-up plan of the disease among attendants of first attack and relapse were highly significant (p=0.00).

Conclusion: There is lack of knowledge as to the nature of disease nephrotic syndrome, its etiology, course and prognosis of the disease. Respondents of relapse cases of having nephrotic syndrome had better perception in some aspects of the disease than those of first attack. There are still information gap among the respondents which reflect that our counseling is not up to the mark.

Pattern of Bowel Habits among Exclusively and Non-exclusively Breastfed Babies

Manzurul Islam, **ARM Luthful Kabir**

Background : Parents are very much anxious about their child's bowel habits. Exclusively breastfed newborns have frequent bowel movements, which they might think as diarrhea. Normal bowel function occurs even when an infant appears in discomfort and passing infrequent stool, often misinterpreted as constipation.

Objective: Parents don't know what is the normal bowel pattern for their infants in relation to age and feeding pattern. The aim of this study was to observe the pattern of bowel habits among exclusively breastfed and non-exclusively breastfed infants.

Methods: This cross sectional comparative study of 250 infants was carried out in The Paediatrics Department of Institute of Child and Mother Health, Matuail, Dhaka, during November 2014 to October 2015. The Inclusion criteria were age up to 6 months, term neonates, apparently healthy infant and exclusively breast fed or formula fed/ non-EBF. Pre-term neonate, infants with gastrointestinal disease and infants given medication within 1 week before study were excluded from the study. Frequency, Volume, consistency and color of the stool were assessed in relation to the feeding pattern at the 7-15 days, 1-1.5 months, 2-2.5 months, 3-3.5 months and 5.5-6 months of age.

Results: There was a significantly higher mean frequency in the breastfed infants during the first 3 months of life ($p<0.05$ at 7-15 days, at 1-1.5 months, at 2-2.5 months and at 3-3.5 months). By 5.5-6 months, the mean frequency of bowel actions decreased in both groups.

The mean volume of the typical stools passed higher with age in infants of exclusive feeding group. As a group, the breastfed infants produced significantly higher at 7-15 days and 1-1.5 month age group. The average consistency of the stools of all infants changed from soft towards hard with increasing age. The breastfed infants passed softer stools throughout the first 5.5-6 months, than did the non-exclusive breastfed. The colour of stools passed by both feeding groups were almost uniformly yellow (80%). 18% infants having greenish yellow stool in both group but the infants were otherwise normal and 1% infants in first group having back yellow colour stool due to presence of meconium at 7th day of age. Mean weight was significantly higher in exclusive breastfed in 1- 1.5 months and 5.5-6 months infants. WAZ, WLZ and LAZ of all infant were normal among all five groups.

Conclusion: The first ever conducted cross-sectional comparative study with 250 infants in Bangladesh has proved that EBF infants pass stool of higher frequency and volume, and softer in consistency than NEBF infants. The mean weight gain in EBF infants is also significantly higher.

Growth of Infants with Infantile Colic - A Case Control Study

Omar Khaled Faisal, **ARM Lutful Kabir**

Background: Infantile colic is a common pediatric condition which causes significant parental distress. It is a behavioral syndrome characterized by excessive paroxysmal crying that is most likely to occur in the evening without any identifiable cause. It is paroxysm of excessive crying in an otherwise healthy baby lasting more than 3 hours per day, occurring >3 days in any week for 3 weeks, aged 2 weeks to 4 months, Rule of three.

Epidemiology: Internationally, colic affects 10-30% of infants worldwide. This condition is encountered in male and female neonates and infants with equal frequency. The colic syndrome is commonly observed in neonates and infants aged 2 weeks to 4 months.

Materials and methods: This case control study was carried out in Institute of Child and Mother Health (ICMH), Matuail, Dhaka, during July 2014 and June 2015 to compare and measure the growth pattern between infants with infantile colic and healthy infants. The study was also done to evaluate age of onset, gender discrepancy, crying pattern of infants and parental idea of infantile colic.

A total of 150 infant's in the above mentioned hospital were enrolled in this study, out of which 75 were case and rest 75 were control. Preterm, low birth weight baby and features of any other apparent illness were excluded from the study.

Result and Discussion : Socio-demographic characteristics were almost similar between two groups. Exclusive breastfeeding was found 33(44.0%) in infantile colic group and 46 (61.3%) in non infantile colic group. The difference was statistically significant ($p<0.05$) between two groups. Formula milk was more common among the non exclusive breastfeeding infants.

In infantile colic group, mean onset of crying was found 18.3±8.5 days back. Almost three fourth (72.0%) patients were crying 1-2 hours. Majority (42.7%) patients had frequency of crying >3 weeks. Almost two third (65.3%) patients were crying at night. Twenty (26.7%) patients were vomiting and 75 (100.0%) were fussing.

The mean weight was found 4.6±0.68 kg in infantile colic group and 4.14±0.73 kg in non infantile colic group. The mean OFC was found 37.55±1.33 cm in infantile colic group and 37.01±1.02 cm in non infantile colic group. The mean weight and OFC were significantly ($p<0.05$) higher in infantile colic group, however, length was almost similar between two groups.

Among anthropometric measurements, WAZ was significantly higher was infantile colic than non infantile colic group. However, other anthropometric measurements (WLZ and LAZ) were almost similar between two groups. In this present study, it was observed that the parental idea about infantile colic was that due to abdominal pain (30.7%), abdominal gas (21.3%), abdominal discomfort 7 (9.3%) and no idea (16%).

Conclusion: Infantile colic was higher among non-exclusive breastfeeding than the exclusive breast feeding infants. Among the growth parameters, weight, WAZ and OFC were higher in infantile colic group

Non Respiratory

Proportion of Chronic Diseases among Severely Wasted Under 5 Children Hospitalized in Pediatric Department of Sir Salimullah Medical College and Mitford Hospital, Dhaka

Rumana Nusrat Shapla, **ARM Luthful Kabir**

Introduction: Now a day if a severely wasted child is found, one thinks that it is a case of severe acute malnutrition (SAM). But other than SAM several conditions may also cause severe wasting and those should also be considered. So, this study will help to know the magnitude of chronic diseases among the severely wasted under 5 children.

Objectives: To determine the frequency of chronic diseases and co-morbidities among all admitted severely wasted under 5 children.

Methodology: This cross sectional study was conducted over six months, from October 2015 to March 2016 in the pediatric ward of Sir Salimullah Medical College and Mitford Hospital. It included WHO classified severely wasted children of 29 days to 60 months of age. Then we tried to find out the main cause of wasting by proper history taking, physical examination and relevant investigations. We tried as much as possible to reach a correct diagnosis. The patients were followed up to discharge. Cases were divided into two groups, SAM and chronic disease with FTT. Types of chronic diseases and co-morbidities of SAM patients were recorded.

Results: Out of total 2722 patients admitted for all reason during the study period 1588 (58.3%) were under 5 children. Among them 144 (9.1%) were severely wasted. Finally, 106 patients were analyzed. Of them, 63 (59.4%) were SAM patients and 43 (40.6%) were chronic disease with failure to thrive (FTT). Most of the patients of both groups were from low income family. Children bellow 24 months were mostly affected in both groups and the frequency of wasting significantly reduced in SAM group with older age. In this group the educational status of mother was lower. Mean calorie deficit was significantly higher in SAM group (48.93±12.01) and the main cause of mean calorie deficit was faulty feeding. It was found that highest (29.4%) patients of chronic disease group had chronic heart disease (CHD) followed by 22.7% had CP and 6.8% had hereditary haemolytic anaemia. Most common co-morbidity found in SAM group was bronchopneumonia (27.4%), followed by acute watery diarrhoea (21.0%) and iron deficiency anaemia (19.4%).

Conclusion: About 41% of severely wasted under 5 hospitalized children had chronic diseases. Top 4 chronic diseases found in WHO classified severely wasted under 5 children were congenital heart disease, cerebral palsy, hereditary haemolytic anaemia and cystic fibrosis. And top 4 common co-morbidities in SAM patients were pneumonia, acute watery diarrhoea, iron deficiency anaemia and bronchiolitis.

Developmental Milestones of 120 Infants: Birth to 12 Months

Asma Khatun, **ARM Luthful Kabir**

Background: The timing of a milestone is influenced by many factors, which may be genetic or environmental in origin. Socio-economic status is related to the development of milestones. Sex has also significant effect to the timing of some psychomotor milestones.

Objectives: The aim of this study is to see the pattern of milestones of development of infants in our country and to compare it in different socioeconomic groups and sex.

Methods: Healthy term newborn with average birth weight were included in our study and milestones of development of these birth cohort were assessed monthly at birth to 12 months of age by using a set of 60 milestones selected from an official journal of the American Academy of Paediatrics that together cover the four basic milestones of development(Gross Motor, Fine Motor, Self-Help, Social/Emotional and Language). Each baby of our birth cohort were grouped according to socioeconomic status (upper, middle and lower class) and sex (male and female) and inter group comparison were done.

Results: Of the 217 enrolled babies, 120 follow up completed, 2 developed meningitis and 95 were lost to follow up . There was no significant sex difference in the age of attaining most of the milestones except for language development in which 100% female babies attained this in time where the percentage of male babies were 91.9% to 93.5%($p<0.05$). There was no significant difference in milestones of development in different socioeconomic group. Upper class babies (94.7% to 100%), middle class babies (92.3% to 97.4) and lower class babies (82.3% to 95.2%) attained milestone of development in time($p>0.05$).

Conclusion: There was no significant difference between male and female infants in achieving most of the milestones of development except in language development in which percentage of female infants were little bit higher than that of male infants. There was also no significant difference among different socioeconomic groups in achieving milestones of development but the percentage of infants of upper class group were slightly higher than middle and lower class group.

Prevalence and Risk Factors of Measles in Under 5 Children in Rural Bangladesh

Mommul Hoque, Syeda Afroza, Fazlur Rahman, Pravat Chandra Barua, Abul Hossain Khan, Quamrul Hassan, **ARM Luthful Kabir**

Objective: This study aimed to define the prevalence of measles as well as to identify the risk, factors of measles in the under-five children of Bangladesh.

Methos: A cross-sectional study was conducted from July 1999 to June 2000 on 25,695 under 5 children. All children aged 6 months -59 months from 8 randomly selected Unions out of 2 randomly selected divisions of the country were included in the study for initial screening. Face to face interviews were performed with the mothers or other guardians at the household level using a structured questionnaire. Measles was diagnosed using criteria based on the clinical definition of CDC (Center for Diseases Control), USA. For risk analysis, every 10Ui child in the screening enrollment was labelled as controls and as such 752 children were analyzed as controls.

Resuls: The prevalence of measles was 1.46% (95% CI 1.32-1.62). It was found that children below 9 months of age had a significant higher prevalence rate (2.7% vs 1.33%) of measles than the older children (10 months under 5 years). The study also revealed that 28.6% of measles vaccinated children had developed measles. Lower age group (below 9 months) children and economically deficit familes were identified as risk groups (OR 2.36 , 95% CI 1.53-3.62 and OR 1.42, 95% CI 1 02-1 99) Nan- vaccinated children (both measles and other vaccinations) were found more prone to measles attack than the vaccinated group (OR 1.50,95% CI 1.12-2.01).

Conclusion: It was concluded that children aged 6-9 months comprise a significant vulnerable group susceptible to develop measles. It was also demonstrated that a significant proportion of measles vaccinated children are being attacked by measles.

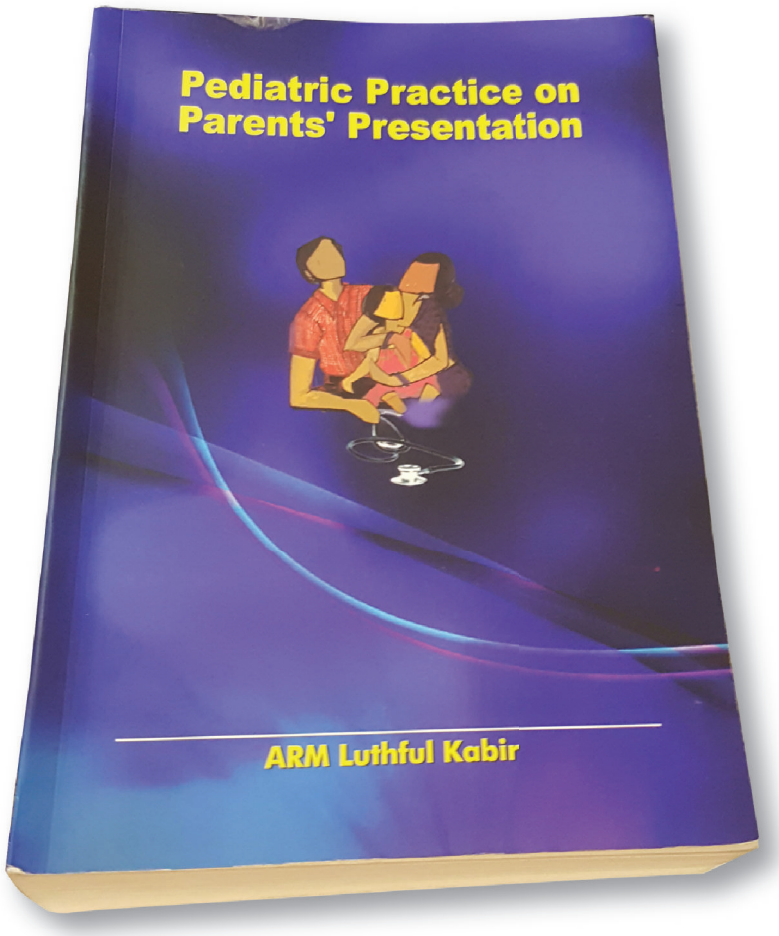
05

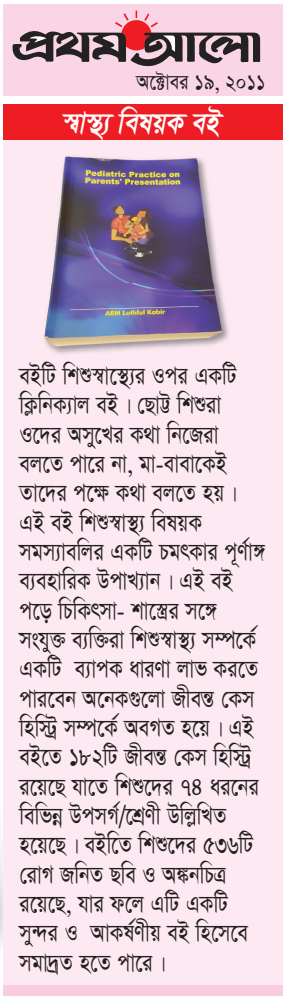
Books and Reports

Pediatric Practice on Parents' Presentations (182 cases)

Published in Bangladesh in 2011

The book has been forwarded by the Icon Pediatrician of Bangladesh **Prof M Q-K Talukder** and also reviewed by the Indian J Pediatrics October 2012





প্রথম আলো

অক্টোবর ১৯, ২০১১

স্বাস্থ্য বিষয়ক বই

বইটি শিশুস্বাস্থ্যের ওপর একটি ক্লিনিক্যাল বই। ছোট্ট শিশুরা ওদের অসুখের কথা নিজেরা বলতে পারে না, মা-বাবাকেই তাদের পক্ষে কথা বলতে হয়। এই বই শিশুস্বাস্থ্য বিষয়ক সমস্যাবলির একটি চমৎকার পূর্ণাঙ্গ ব্যবহারিক উপাখ্যান। এই বই পড়ে চিকিৎসা- শাস্ত্রের সঙ্গে সংযুক্ত ব্যক্তিরা শিশুস্বাস্থ্য সম্পর্কে একটি ব্যাপক ধারণা লাভ করতে পারবেন অনেকগুলো জীবন্ত কেস হিস্ট্রি সম্পর্কে অবগত হয়ে। এই বইতে ১৮২টি জীবন্ত কেস হিস্ট্রি রয়েছে যাতে শিশুদের ৭৪ ধরনের বিভিন্ন উপসর্গ/শ্রেণী উল্লিখিত হয়েছে। বইতে শিশুদের ৫৩৬টি রোগ জনিত ছবি ও অঙ্কনচিত্র রয়েছে, যার ফলে এটি একটি সুন্দর ও আকর্ষণীয় বই হিসেবে সমাদৃত হতে পারে।

The book contains 182 'live cases' under 74 different varieties of presentations of parents and is studded with 536 photographs and drawings. There are some elaborations of cases with follow up visits. Each case summary is followed by a brief discussion about the disease which included: definition, epidemiology, etiology, pathophysiology, clinical features, investigations, treatment and finally some cluster clues for quick catching the clinical diagnosis. Some essential issues like: who is a child, growth of a girl up to 18 years, growth charts, developmental mile stones, infant and young child feeding (IYCF), counseling in pediatric practice, case taking and physical examination in Pediatrics have been annexed to add the flavor of complete theme on pediatrics.

Pediatric Practice on Parents' Presentation

Foreworded by : Prof. M Q-K Talukder

It is a pleasure to write a foreword for this extensive work documenting almost 25 years of personal Pediatric practice by of one of the leading Pediatricians in Bangladesh today. I have known Dr ARM Luthful Kabir for the past 26 years, first as my house physician, then as a postgraduate student at the Institute of Postgraduate Medicine and Research (IPGMR, now BSMMU), later as an academic staff and a colleague at the Institute of Child and Mother Health (ICMH) in Matuail. He has an uncommon tenacity in getting to the diagnosis in the most difficult cases. I have often in the past referred some complicated cases to him, to be rewarded with correct diagnoses brought about by much reading and thinking.

The book is written in a most engaging way. The author makes the dry facts of childhood disease come to life with actual cases. You come away with a very convincing snapshot of how children present in various disease states. This book also provides rich detail of the cultural setting of Bangladesh in the stories it has to tell. **Dr. Kabir had no intention of writing a textbook. Rather he has painted the canvas of Bangladesh Pediatric practice,** which will allow readers to immediately relate what he has written to the scenarios they come across in their day-to-day clinical practice. This is a solid achievement. Inclusion of differential diagnosis with each problem would enrich the book.

The book directs one to a new way of learning the art and science of Pediatrics. Specialists in Pediatrics, Pediatric practitioners, postgraduates in Pediatrics, general practitioners, house physicians in Pediatrics and senior medical students will undoubtedly benefit from using this book.

Reviewed by: Prof. Suresh Gupta

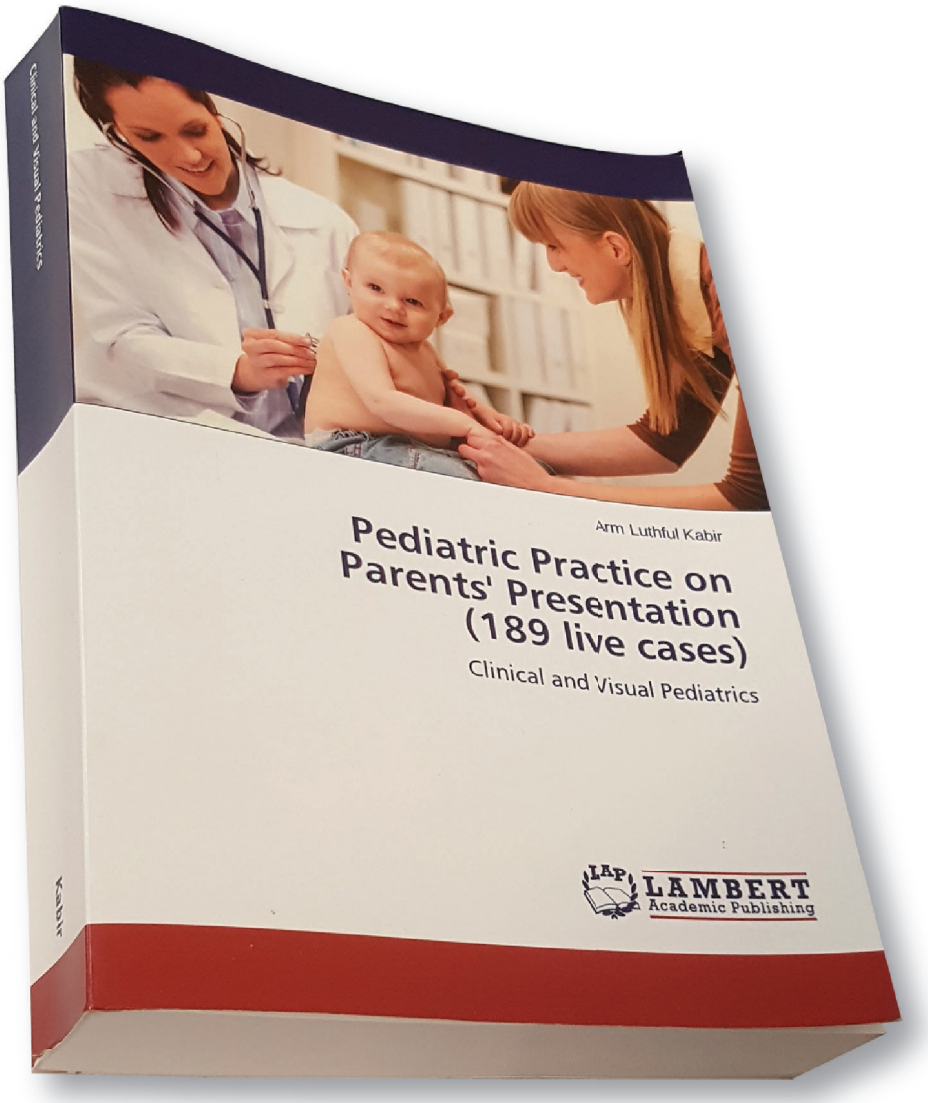
Indian Journal of Paediatrics 2012; 79(10): 1395

The blue cover of the book with a sketch of parents with a child reflect the theme and concept of this work. This book spread over 900 pages **is distinct and different and stands out in the crowd with its unique way to deal with this subject**. The book addresses the constellations of symptoms with which children are brought by their parents to the pediatricians. The approach seems to be more true-life, practical and pragmatic at the same time. The book has 74 scenarios which are explained with 182 real case examples. The addition of 536 pictures makes this book very interest¬ing and engaging. The tabular format along with cluster clues as highlighter makes it decipherable and user friendly. Through the 74 scenario, the author discusses the common differential diagnosis along the line of history, physical examination and investigations. Though the content of the book reflects the childhood disease pattern and cultural background of Bangladesh, however a similar pattern is seen in South East Asia including India. So the manu¬script seems to be useful for Indian pediatricians too. A significant emphasis has been placed on growth moni¬toring and parental counseling. The author has also included art of history taking and physical examination along with growth charts, immunization; schedule and nutritional advice. The book has limited itself to initial treatment and the detailed management protocols need to be taken care of. Though the book is humbly priced at 20$ but its weight (2 kg) may make it difficult to carry everywhere. Overall it is a useful resource for pediatricians while working in indoor wards, emergency or office practice.

Pediatric Practice on Parents' Presentations Volume-1 (189 cases)

Clinical and Visual Pediatrics

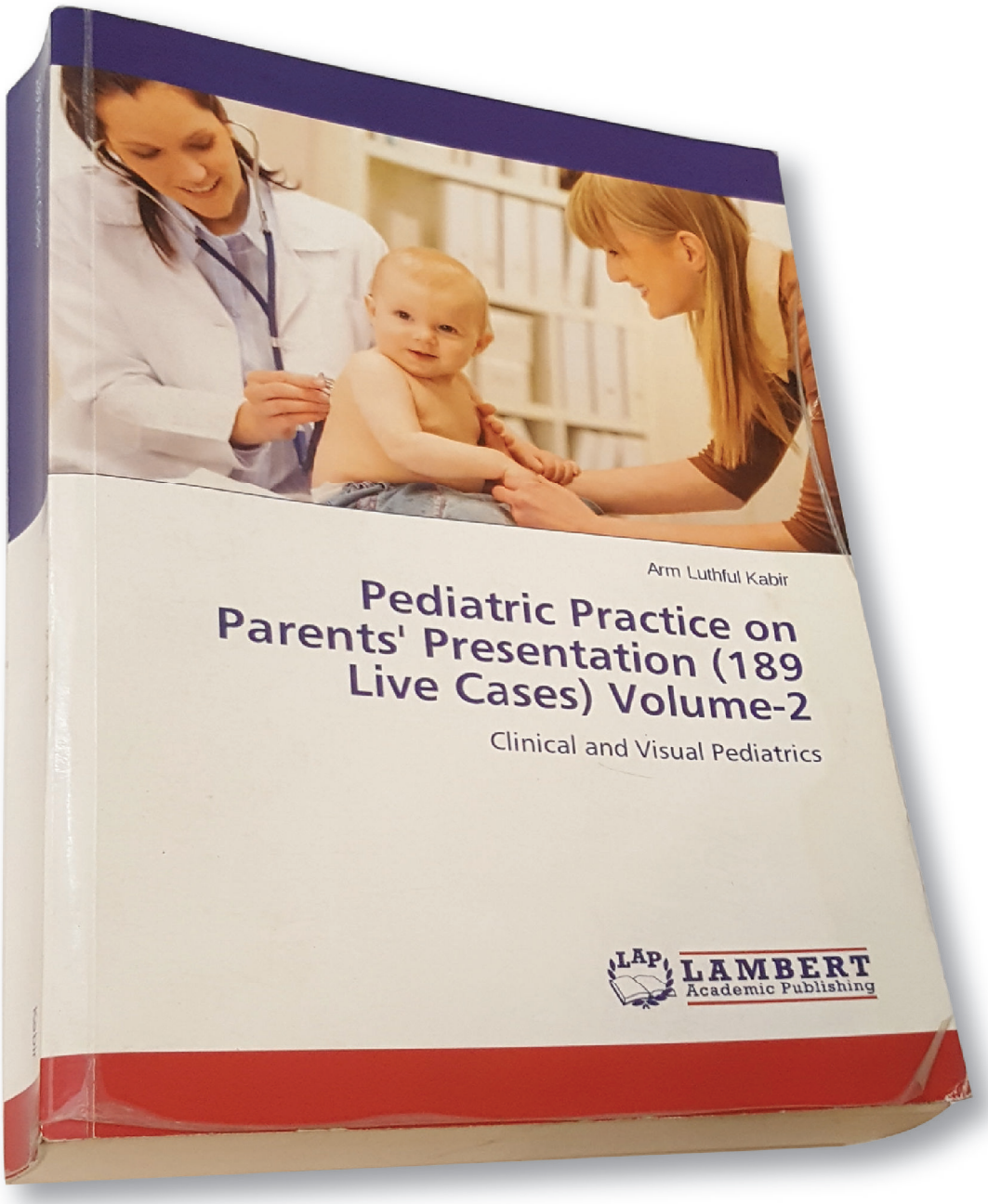
Published in 2014 by Lambert Academic Publishing, Germany

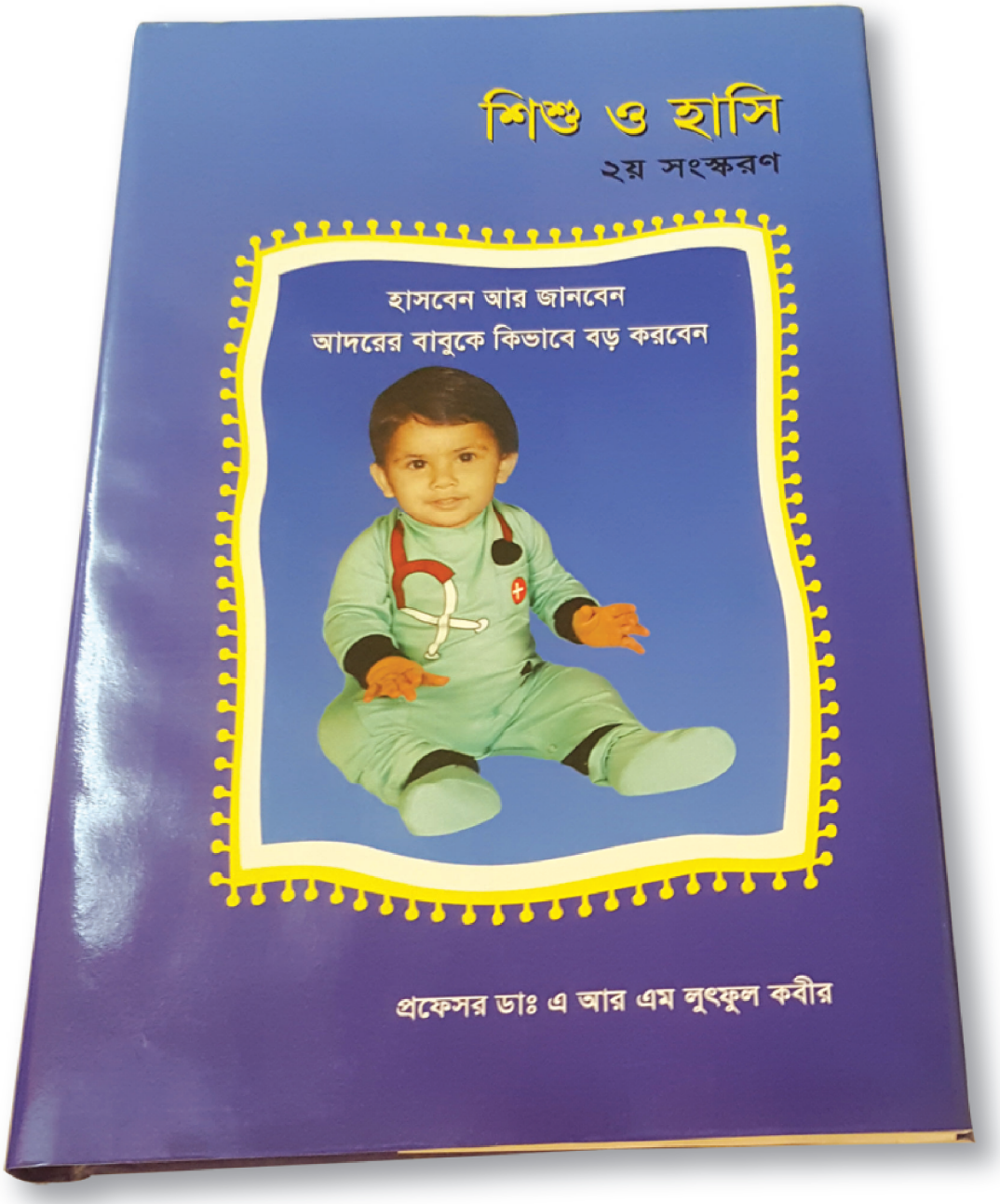


Pediatric Practice on Parents' Presentations Volume-2 (189 cases)

Clinical and Visual Pediatrics

Published in 2016 by Lambert Academic Publishing, Germany





"বিশ বছর প্রাইভেট প্র্যাক্টিস করাকালীন সময়ে দুই হাজারের অধিক মা-বাবাদের হুবহু সংলাপ বাছাই করে শিশুদের বৈশিষ্ট্য, সার্বিক সমস্যা ও রোগ বালাইকে ১৯ ভাগে ভাগ করে সহজ, সুন্দর ও হাস্যরসের সাথে উপস্থাপনা করে সমাধান দেবার ক্ষুদ্র প্রচেষ্টা"

ভূমিকা লিখেছেন - **অধ্যাপক আবদুল্লাহ আবু সায়ীদ**

ভূমিকা

অধ্যাপক এ.আর.এম. লুৎফুল কবীরের লেখা 'শিশু ও হাসি' বইটি চিকিৎসা বিষয়ে নিয়ে লেখা, কিন্তু তুলে ধরা হয়েছে দম-আটকানো হাসির ভেতর দিয়ে। অথচ এই হাসির এতটুকুও বানানো নয়। বাবা-মায়েরা ডাক্তারদের কাছে এসে তাদের ছেলেমেয়েদের রোগের বিবরণ দিতে গিয়ে যেসব সরল, অবোধ ও হাস্যকর ভাষায় প্রতিনিয়ত তা তুলে ধরেন, এগুলো হুবহু সেই ভাষার সেই গল্প, তাদের জবানিতেই লেখা। ট্রুথ ইজ স্ট্রেঞ্জার দ্যান ফিকশন। তাই এই বাস্তব কথাগুলো চুটকির চাইতেও হাস্যকর।

মানুষের মুখের আটপৌরে ভাষা ব্যবহার করে চিকিৎসা বিষয়ের একটি বই যে এমন রম্য ও সরস ভঙ্গিতে লেখা যেতে পারে, এ একবারেই অভিনব।

সারাটা বই জুড়ে রয়েছে এই হাসির হুল্লোড়। কিন্তু তা কেবল হাসাবার জন্যে নয়। এসবের ভেতর দিয়ে পাঠক অনায়াসে জেনে যান একজন শিশুর কী কী রোগ হতে পারে, সেসব রোগের নাম বা লক্ষণগুলো কী, কোন রোগের চিকিৎসা দরকার, কোন রোগ সামান্য চেষ্টাতেই সেরে যায়, কিংবা কোন কোন রোগ আসলে রোগই নয়, বাবা-মার বোঝার ভুলমাত্র।

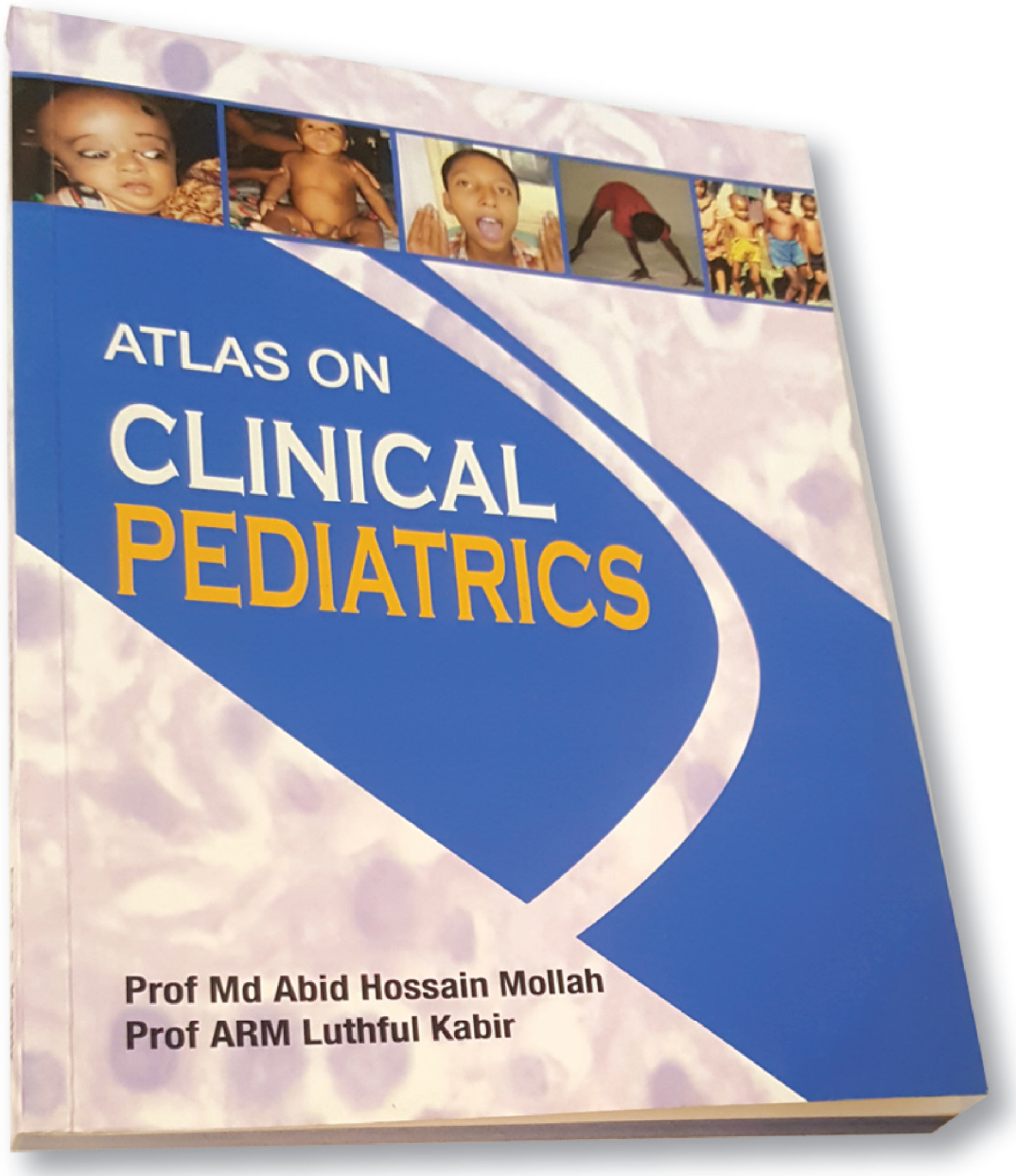
বইটি পাঠকের জন্যে একই সঙ্গে আনন্দের আর উপকারের। বইটি বহুলভাবে পঠিত হলে তা শিশুদের নিরাপদ ও বাবা-মাদের দুর্ভাবনামুক্ত করবে। হাস্যরসের উপাদান বইটিকে নতুন মাত্রা দিয়েছে। কেবল চিকিৎসা গ্রন্থ হিসেবে নয়, সাহিত্য হিসেবেও বইটি মূল্যবান।

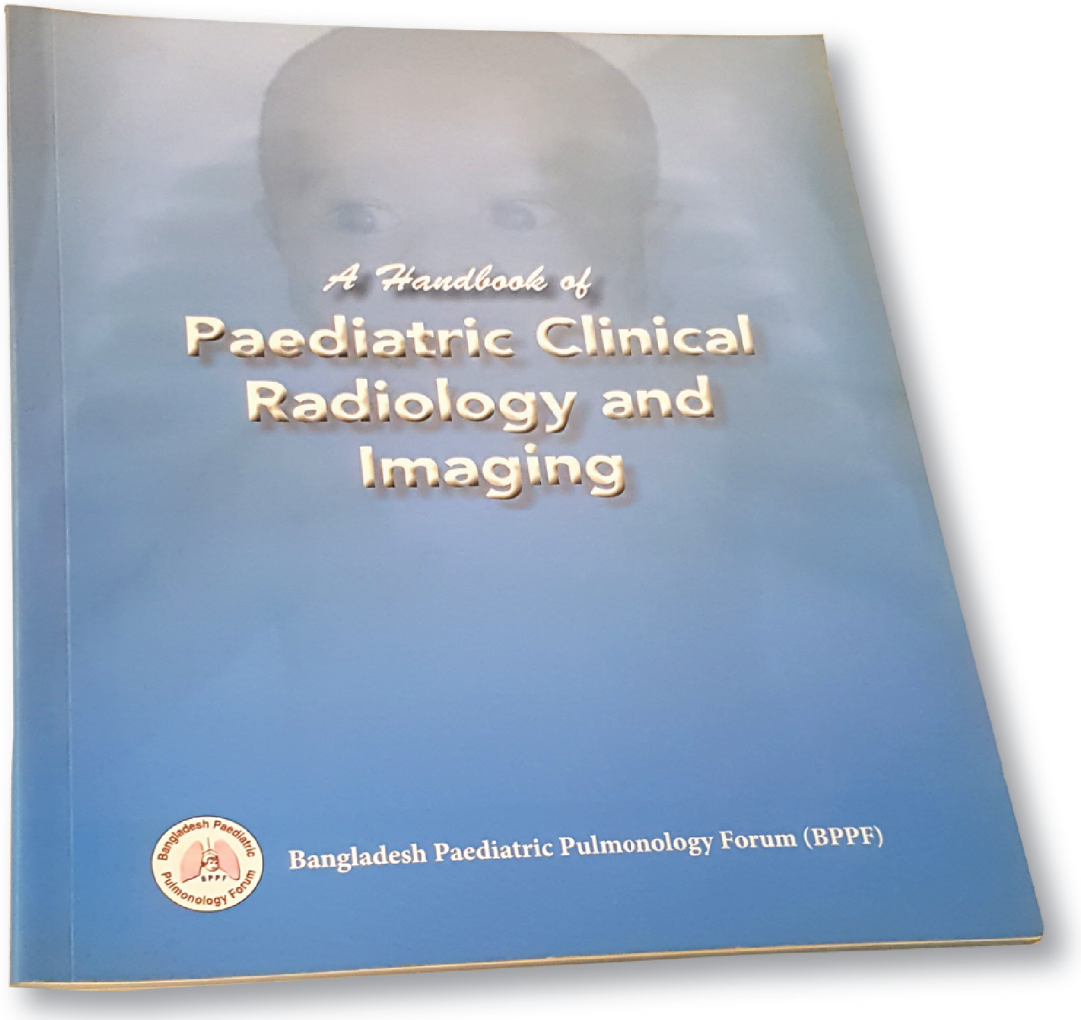
সম্পূর্ণ নতুন দৃষ্টিভঙ্গি থেকে বইটি লেখার জন্য লেখককে অভিনন্দন।

আবদুল্লাহ আবু সায়ীদ
২ জানুয়ারী ২০১৫

Atlas on Clinical Pediatrics

There are 20 chapters including 131 colored pictured clinical cases of all the systems including growth and development and neonatology. The book is particularly mean for post graduate students in Pediatrics.



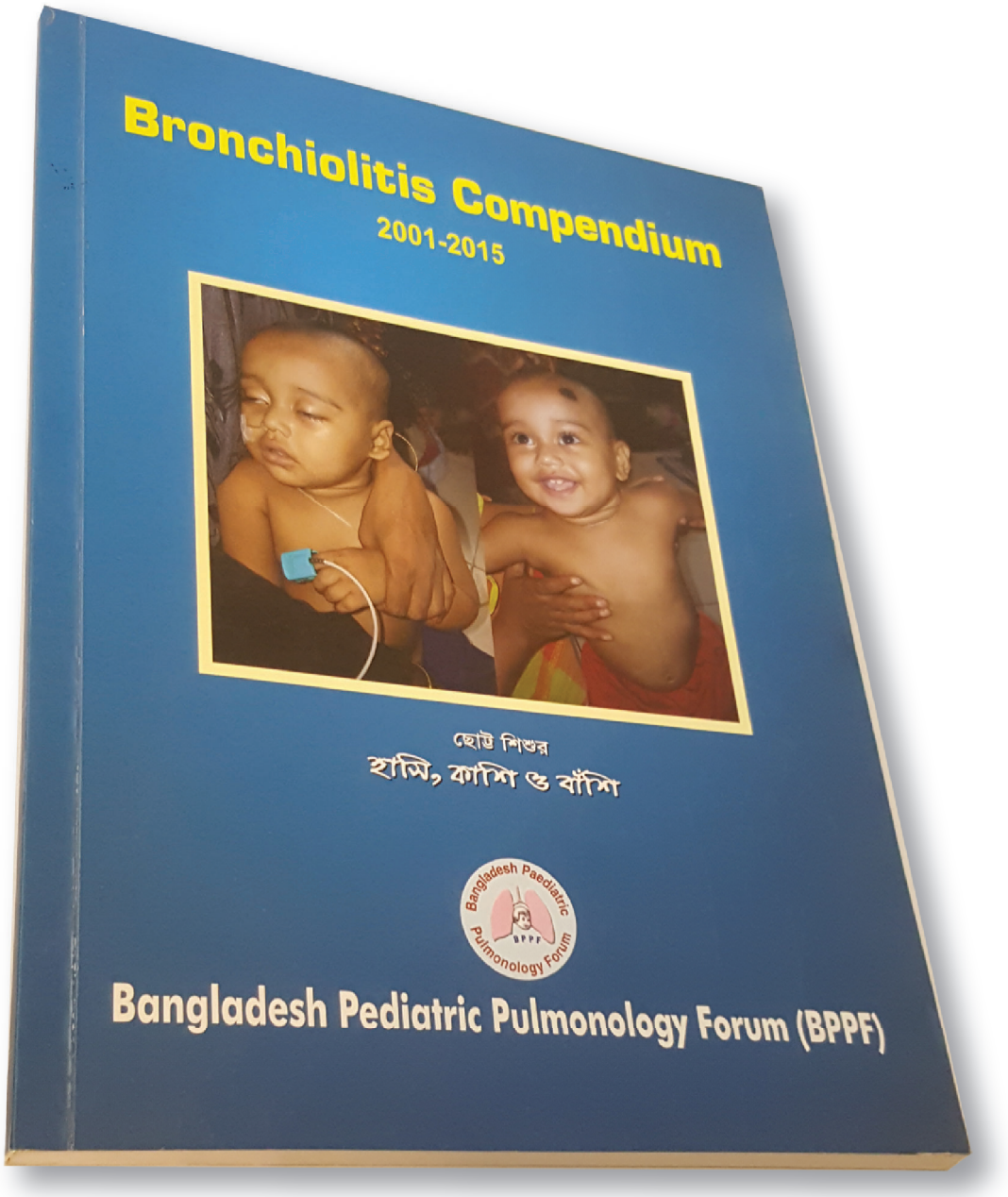


Concept & Resources:
Prof. ARM Luthful Kabir
Prof. Md. Abid Hossain Mollah

Organizing, computing and online research:
Dr. Mehdi Pervez

We have discussed the general principles of studying a chest film, followed by the common diseases like pneumonia and its complications, bronchiolitis, asthma, pleural effusion, empyema thoracis, persistent pneumonia, pulmonary tuberculosis, foreign body (FB) aspiration, bronchiectasis including cystic fibrosis, and primary ciliary dyskinesia. We also mentioned congenital malformations like diaphragmatic hernia of different types, congenital lobar emphysema, tracheo-esophageal fistula, and rare diseases like idiopathic pulmonary hemosiderosis, pulmonary alveolar microlithiasis, pulmonary arterio-venous malformations etc.

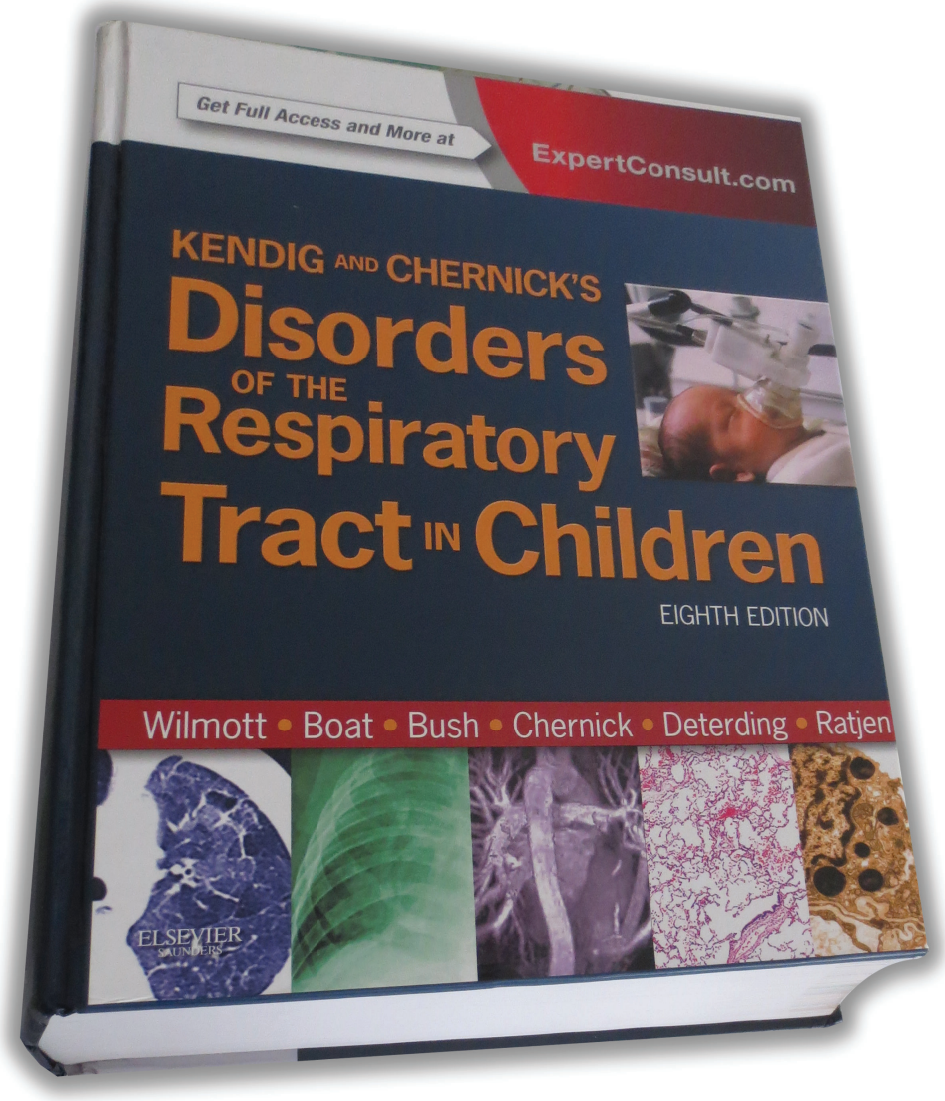
Bronchiolitis Compendium



Editors : Prof ARM Luthful Kabir, Prof Md. Abid Hossain Mollah, Prof Md Ruhul Amin

Bronchiolitis is the single most infective disease upon which so far maximum number of continuous research activities have been conducted since recognizing its existence. This compendium contains 60 studies (22 articles, 22 dissertations, 7 theses, others 9)

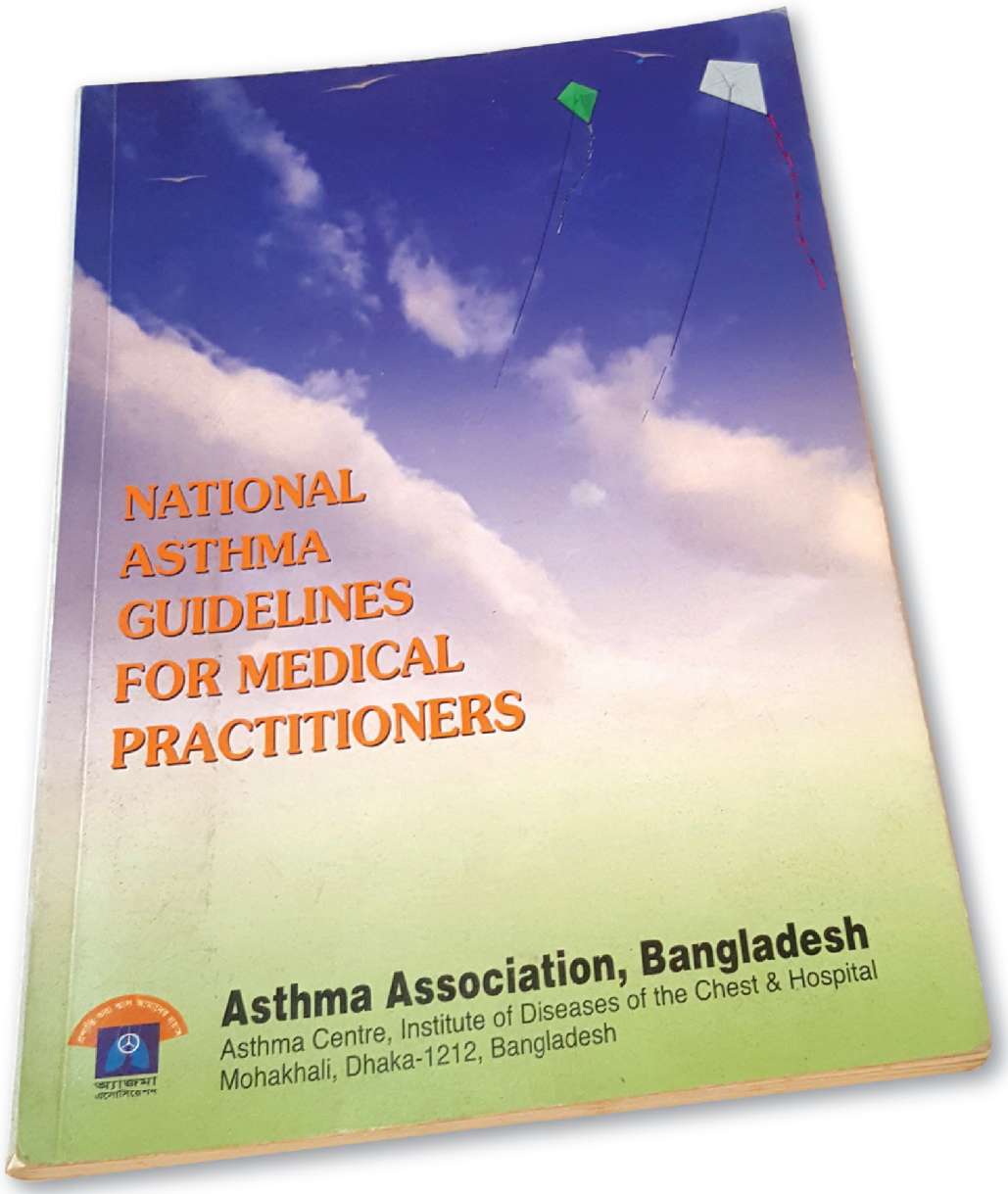
Management of Bronchiolitis without Antibiotics Study by ARM Luthful Kabir et al. Published in *Acta Paediatrica 2009* has been coated in the following Bibel Book of Paediatric Respiratory Medicine



Quotation in page no. 448.

A recent moderate-sized study (n=295) of antimicrobial use in infants with bronchiolitis demonstrated that there was no clinical advantage to using antimicrobials in the care of such children. The authors concluded that supportive measures without antimicrobials remained the standard of care in the hospital setting.75 ARML Kabir, AH Mollah, KS Anwar, AKMF Rahman, R Amin, ME Rahman. Management of Bronchiolitis Without Antibiotics: A Multicentre Randomized Control Trial in Bangladesh. Acta Paediatrica. 2009; 98(10): 1593-1599.

National Asthma Guidelines for Medical Practitioners



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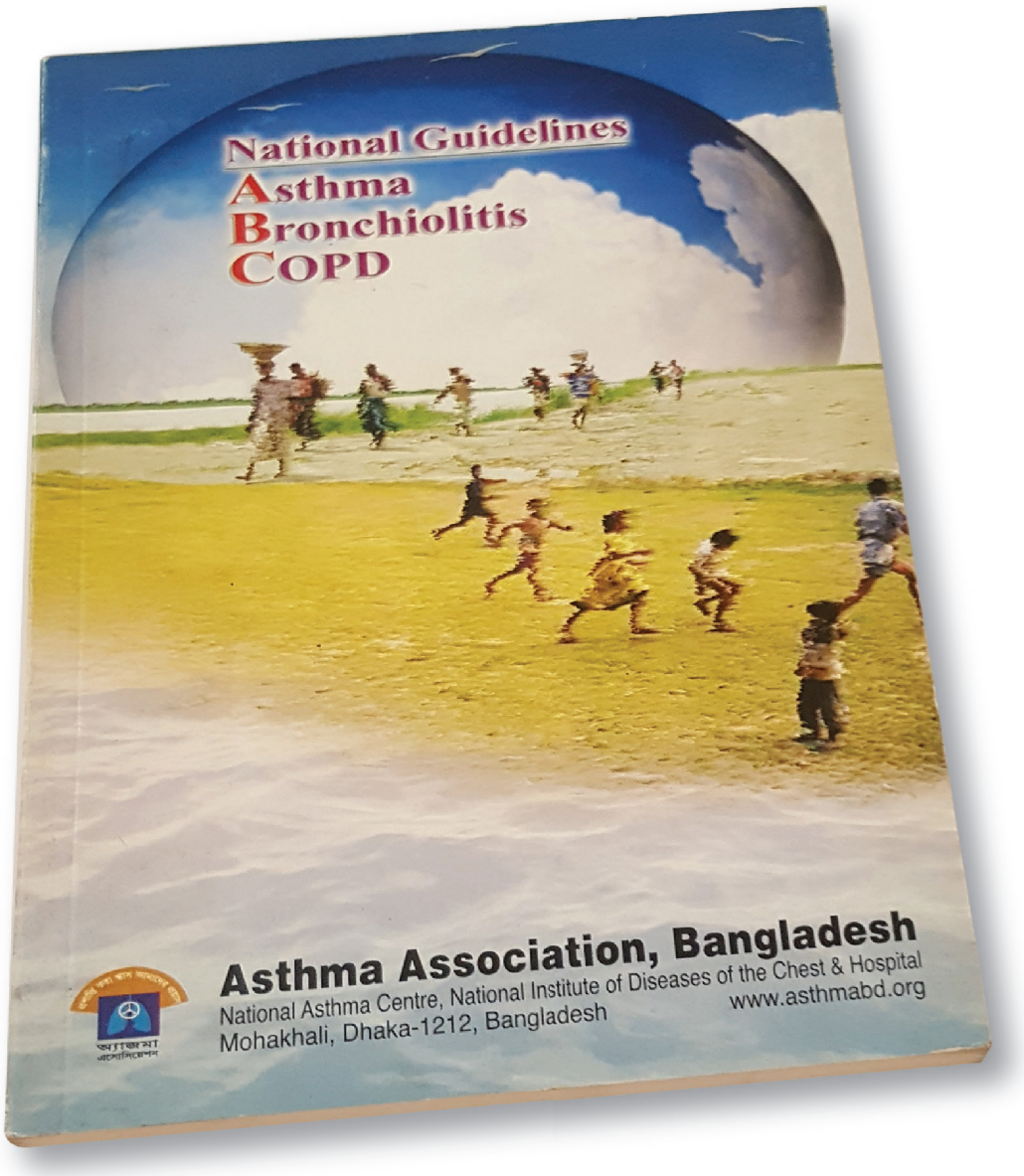
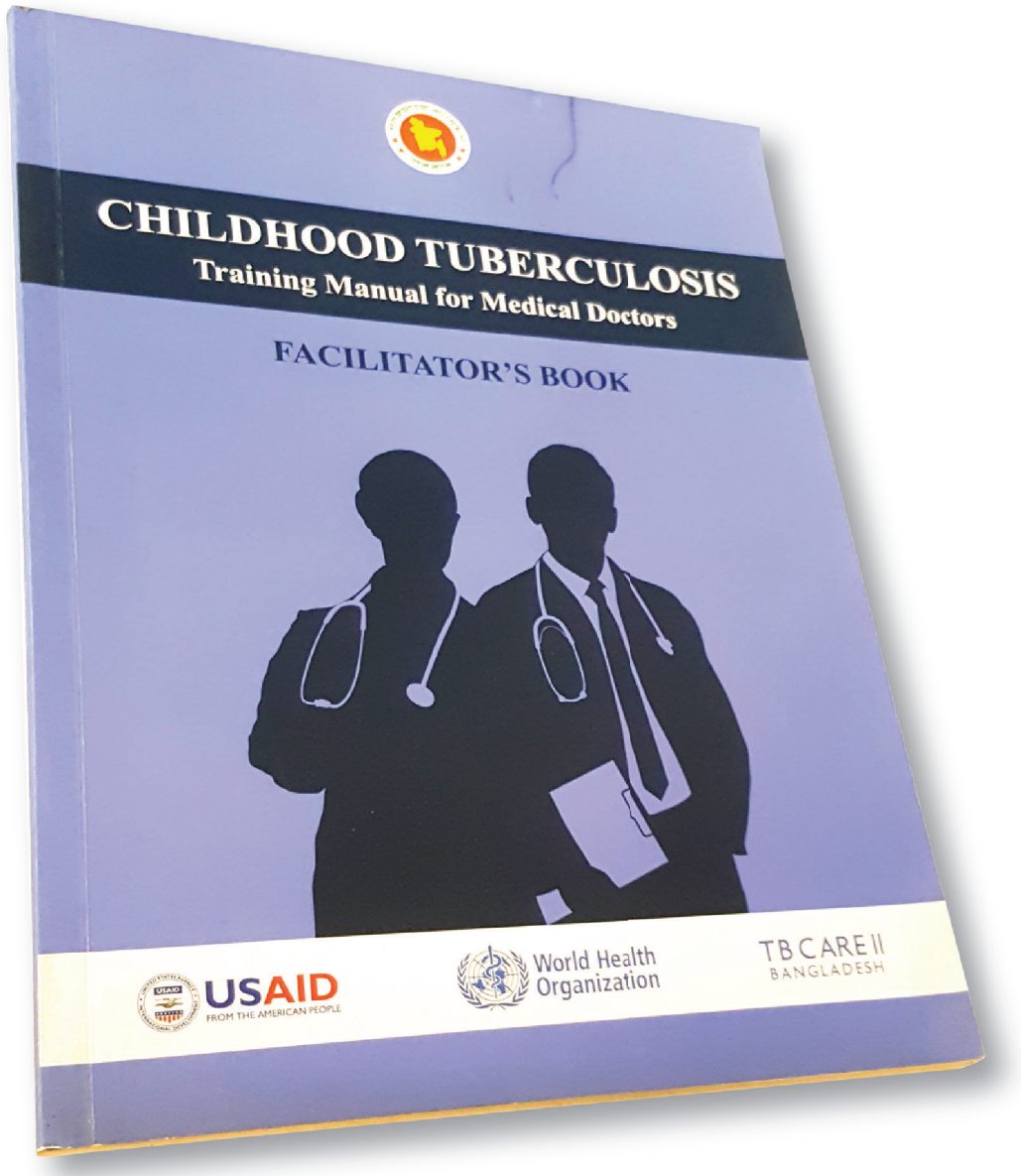
National Guideline: Asthma, Bronchiolitis and COPD

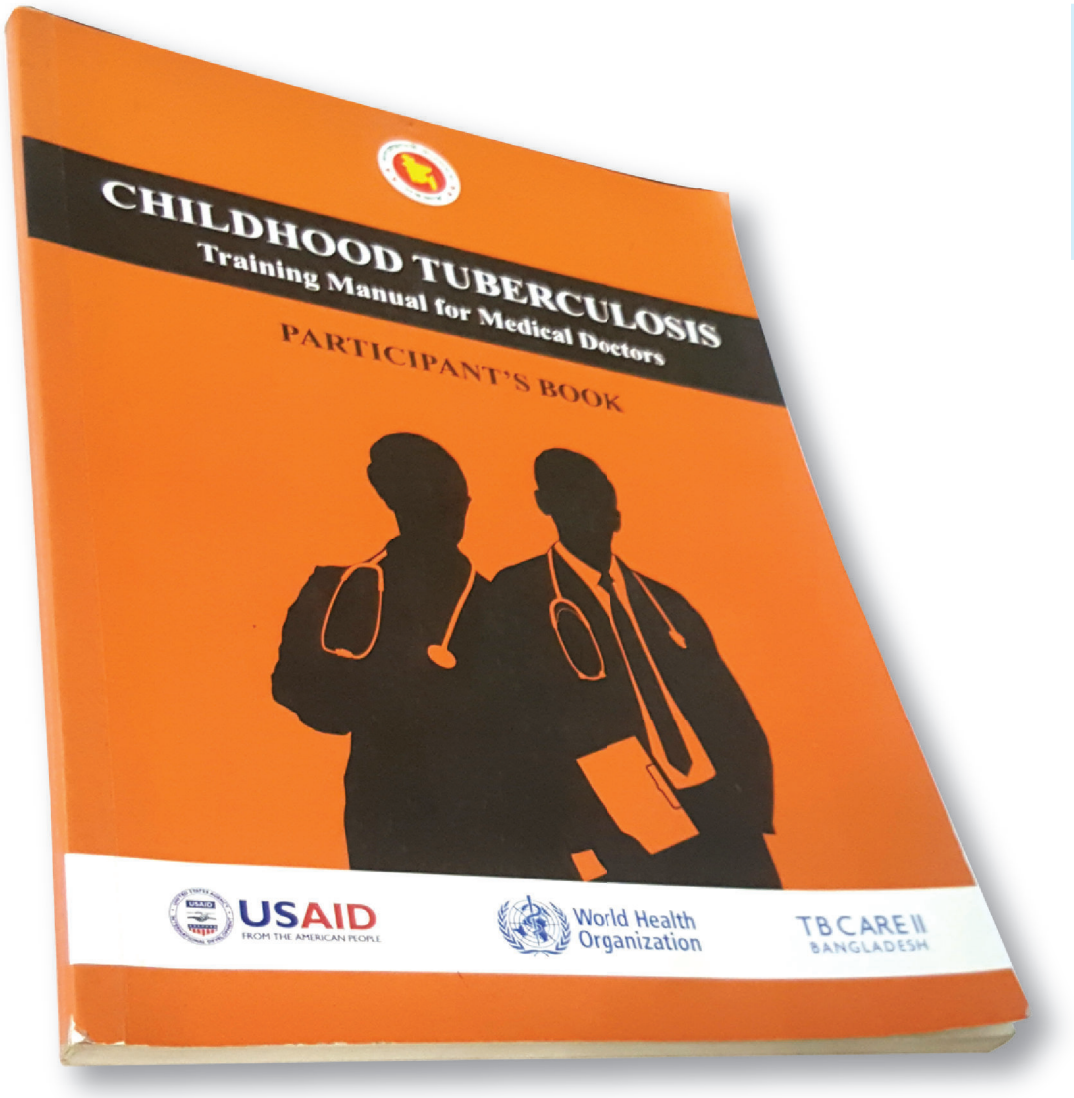




NTP wishes to express its special thanks to the authors, Dr. Shakil Ahmed, Assistant Professor of Pediatrics, Shaheed Suhrawardy Medical College; and Prof. Dr. ARM. Luthful Kabir, Professor of Pediatrics, Sir Salimullah Medical College, Bangladesh; who developed these documents.

Dr. Md. Ashaque Husain
Director MBDC and Line Director TB Leprosy
Directorate General of Health Services
Bangladesh.

January 2014



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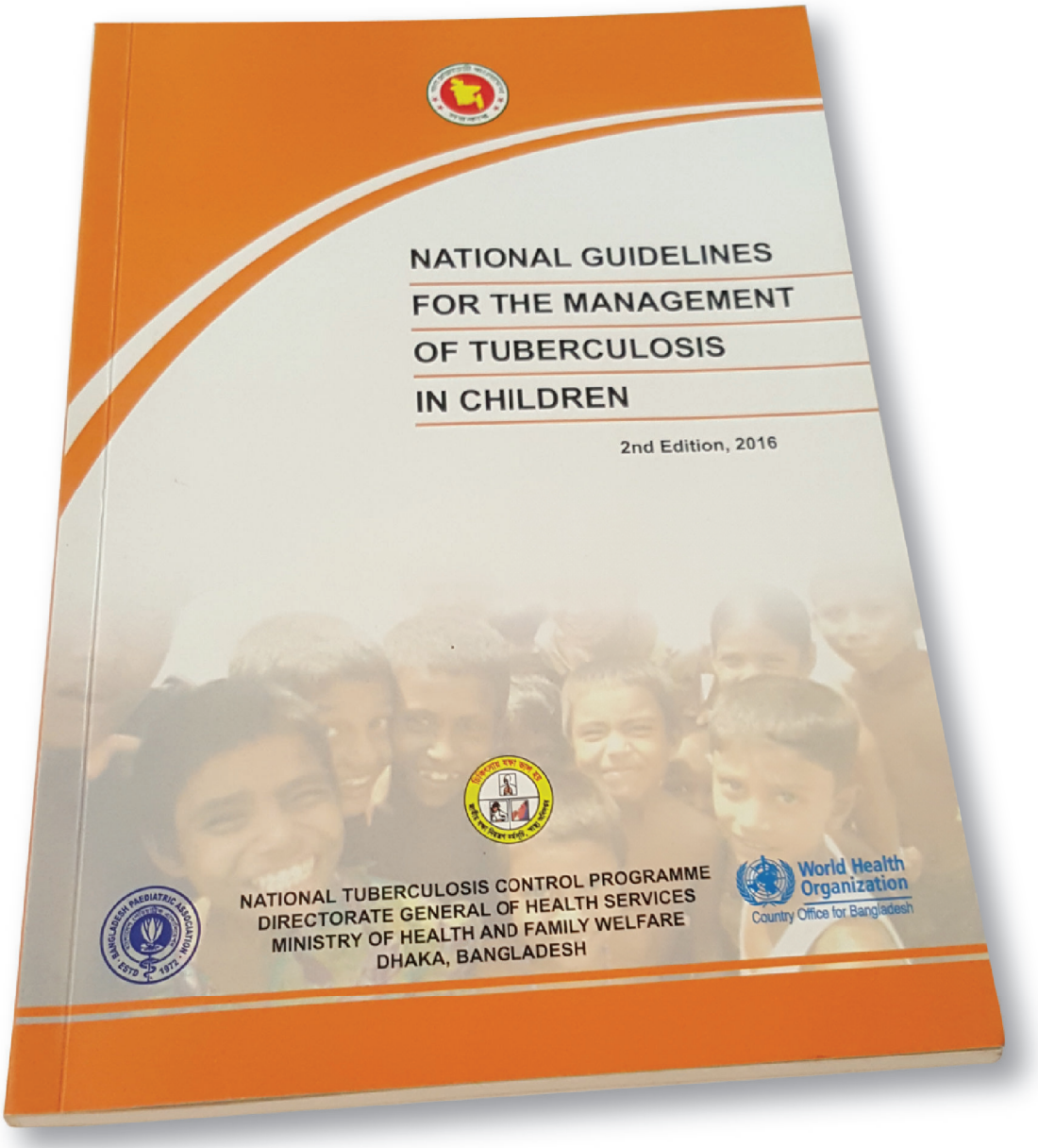
Dr. Md. Ashaque Husain
Director MBDC and Line Director TB Leprosy
Directorate General of Health Services
Bangladesh.

January 2014

National Guidelines for Management TB in children



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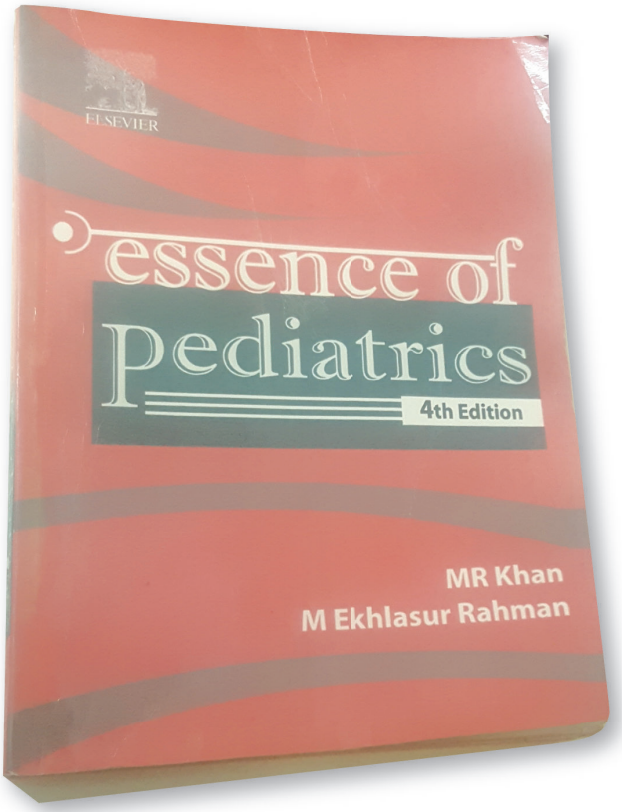
ELSEVIER
essence of
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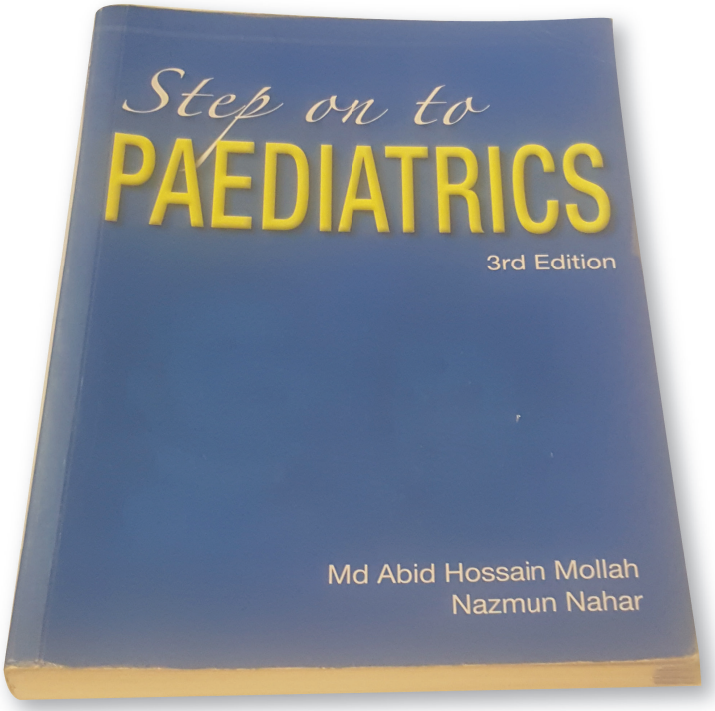
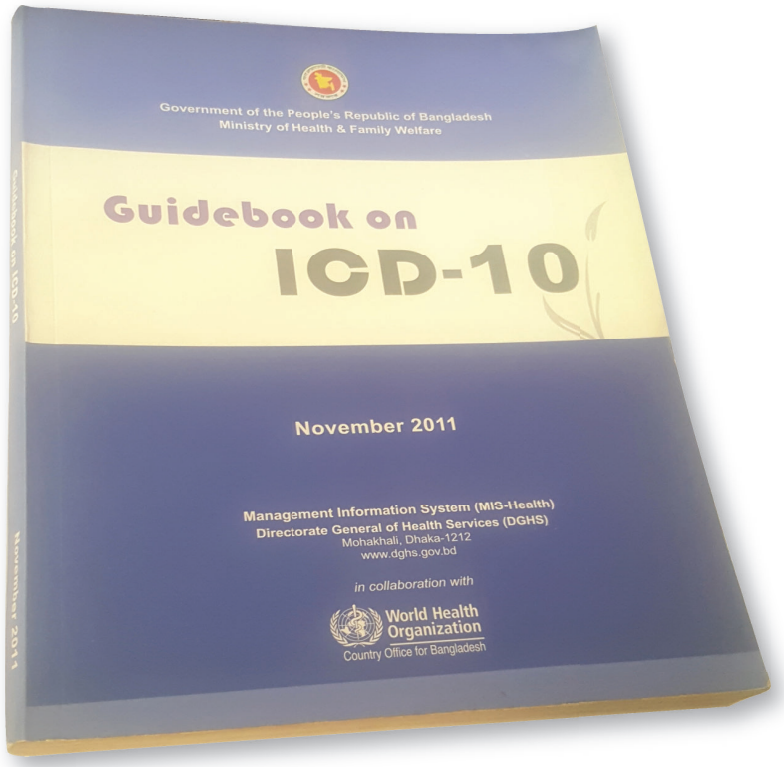
4th Edition
MR Khan
M Ekhlasur Rahman


Step on to
PAEDIATRICS
3rd Edition
Md Abid Hossain Mollah
Nazmun Nahar

Guidelines On ICD-10

International Classification of Diseases (ICD) is a Global Standard for reporting medical diagnosis, procedures and causes of death developed by the World Health Organization (WHO). The current version is ICD-10. The use of ICD-10 by our medical practitioners will help overcoming the problems in processing diseases and causes-specific data in the Management Information System (MIS) of the Director General of Health Services (DGHS).



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Additional Director General (Planning and Development and
Director, MIS, DGHS, Bangladesh (Nov 2011)
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Prepared by
Prof Dr Abul Kalam Azad
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In accordance with guidelines given in a workshop by participants
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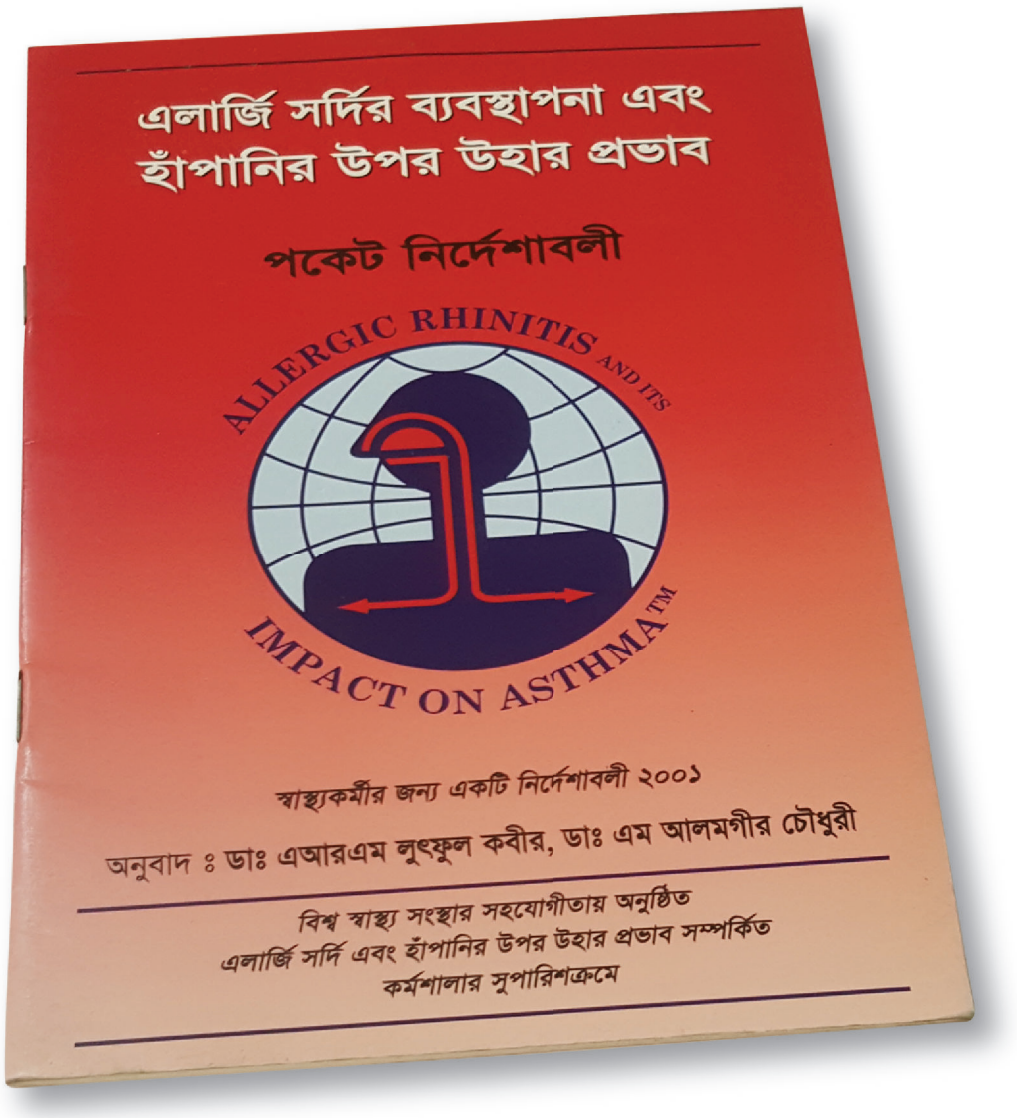
Prof Dr Md Ayub Ali Chowdhury
Prof Dr Shaila Hossain
Dr Md Mahmudul Haque



Translated by **Prof. ARM Luthful Kabir** & Dr. M Alamgir Chowdhury

Research Grant to BPA by
Prof. Dr. ARM Luthful Kabir

Mr. Zahid Maleque, Hon'ble State Minister, Ministry of Health and Family Welfare, Receiving the Cheque of Taka Fifty Lac Donated to BPA as RESEARCH GRANT on 17th November 2017 in 20th National Conference, BPA, Cox's Bazar by Prof. Dr. ARM Luthful Kabir

ঢাকা, ২১ জুন ২০১৫, ৭ অষাঢ় ১৪২২, ৩ রমজান ১৪৩৬ রোববার রেজি. নং ডিএ ১৮৮০, বর্ষ ১৭, সংখ্যা ২২৫, দাম ১০ টাকা

নগর সংস্করণ

প্রথম আলো

কোপা শেষ নেইমারের পৃষ্ঠা : ১৯ | সৌদির ৬০ হাজার নথি ফাঁস করল উইকিলিকস পৃষ্ঠা : ৭ | রানা প্লাজা ধস : ক্ষতিপূরণ পেতে আরও এক মাস পৃষ্ঠা : ১৩ | উপস্থাপনায় শাকিলা পৃষ্ঠা : ১৬

আজ বিশ্ব বাবা দিবস

চিকিৎসক বাবার চোখে মেয়ের প্রথম ১৮ বছর

শিশির মোড়ল

'আমি জানি, প্রত্যেকের কাছেই তার বাবা সাধারণ কোনো ব্যক্তি নন। তারপরও বলব, আমার আব্বু সত্যি অসাধারণ, অতুলনীয়। চিকিৎসক বাবা অনেকেরই আছে। কিন্তু আমার আব্বু আমাকে নিয়ে যা করেছেন, সন্তানের প্রতি গভীর স্নেহের চেয়েও তা বাড়তি কিছু।'

বাবা এ আর এম লুৎফুল কবীর সম্পর্কে গভীর আবেগ আর ভালোবাসার এই কথাগুলো ফারহাত লামিসা কবীরের। এমবিবিএস পাস করে ফারহাত বাংলাদেশ মেডিকেল কলেজ থেকে গত সপ্তাহে ইন্টার্নশিপও শেষ করেছেন। আর বাবা লুৎফুল কবীর স্যার সলিমুল্লাহ মেডিকেল কলেজের শিশু বিভাগের অধ্যাপক।

ফারহাত *প্রথম আলোকে* বলেন, 'আব্বু আমার জন্মের পর থেকে আমার বেড়ে ওঠা, বড় হওয়া শুধু দেখেননি, রীতিমতো পর্যবেক্ষণ করেছেন। পর্যবেক্ষণ

এরপর পৃষ্ঠা ১৭ কলাম ২

বাবা অধ্যাপক লুৎফুল কবীরের সঙ্গে চিকিৎসক ফারহাত লামিসা কবীর ● ছবি : প্রথম আলো

● আরও খবর ও ছবি : পৃষ্ঠা-৫, ৯ ও ১৬

চিকিৎসক বাবার চোখে

শেষ পৃষ্ঠার পর

করেই শেষ করেননি, আমার ১৮ বছর বয়স পর্যন্ত তা নোট নিয়েছেন এবং একটি শিশুর বেড়ে ওঠা সেই নোটবইয়ে তুলে ধরেছেন। অনন্যতা না থাকলে এই কাজটি তিনি করতেন না।' এরপর বললেন, 'বিশ্ব বাবা দিবসে আব্বুর প্রতি রইল গভীর ভালোবাসা।'

শিশুস্বাস্থ্য বিশেষজ্ঞ এ আর এম লুৎফুল কবীর *পেডিয়াট্রিক প্র্যাকটিস অন প্যারেন্টস প্রেজেন্টেশন* নামে একটি বই লিখেছেন। *প্রথম আলোকে* তিনি বলেন, 'বইটি মূলত শিশুর বৃদ্ধি ও বিকাশ সম্পর্কে।' চিকিৎসাবিজ্ঞানের শিক্ষার্থী ও পেশাজীবী চিকিৎসকদের জন্য লেখা ৯৩০ পৃষ্ঠার বইয়ের একটি অধ্যায়ে একমাত্র সন্তান ফারহাত লামিসা কবীরের বেড়ে ওঠার তথ্য দিয়েছেন তিনি।

চিকিৎসক বাবা ও মেয়ের সঙ্গে কথা বলে জানা গেছে, ফারহাত লামিসার জন্মের পর থেকে নিয়মিত তাঁর ওজন, উচ্চতা এবং মাথার পরিধি পরিমাপ করতেন লুৎফুল কবীর। ফারহাত বলেন, তাঁর বাবা প্রতি ছয় মাস পরপর সবকিছু পরিমাপ করতেন। এভাবে ১৮ বছর বয়স পর্যন্ত চলে। ১৮ বছরের সেই হিসাব বইয়ে তুলে দিয়েছেন বাবা। ১৯৯০ থেকে ২০০৮ সাল পর্যন্ত কোন বছর ফারহাতের ওজন, উচ্চতা ও মাথার পরিধি কত ছিল, তা এই বইয়ে বর্ণনা করা আছে। বইটি জার্মানি থেকে দুই খণ্ডে প্রকাশিত হয়েছে বলে লেখক জানিয়েছেন।

লুৎফুল কবীর বলেন, 'সবচেয়ে দ্রুত বাড়ে মানুষের মস্তিষ্ক। পূর্ণবয়স্ক একজন মানুষের মস্তিষ্কের যে আকার, তার দুই-তৃতীয়াংশ তৈরি হয় জীবনের প্রথম দুই বছরে। এ সময় অনেক শিশুর মাথার তাপমাত্রা একটু বেশি থাকে। অনেক বাবা-মা চিন্তিত হন। কিন্তু চিন্তার কিছু নেই।' এই শিশু বিশেষজ্ঞ বলেন, শিশুর বৃদ্ধি ও বিকাশ অব্যাহত থাকা দরকার। যদি কখনো তা থেমে যায়, তাহলে বুঝতে হবে সমস্যা আছে।

শিশুর জ্বর হলে, বমি বা বমি বমি ভাব হলে, মাথাব্যথা হলে, খিঁচুনি হলে, মুখ বেঁকে গেলে, কানে জ্বালা হলে, মামস হলে, নাক দিয়ে রক্ত পড়লে, মুখে ঘা হলে, ওজন-উচ্চতা কম হলে, দীর্ঘদিন কাশি থাকলে, শ্বাসকষ্ট হলে, পেটে ব্যথা হলে, জন্ডিস দেখা দিলে এবং এ রকম আরও কয়েক ডজন সমস্যা দেখা দিলে সেই নির্দিষ্ট রোগের লক্ষণ ও করণীয় সম্পর্কে বইটিতে বলা আছে। প্রতিটি ক্ষেত্রে রোগনির্ণয় ও চিকিৎসাপদ্ধতি সম্পর্কে ব্যাখ্যা করা আছে।

ফারহাতের বৃদ্ধি ও বিকাশ পর্যবেক্ষণ করার বিষয়টি কি পরিকল্পিত ছিল—এমন প্রশ্নের উত্তরে লুৎফুল কবীর বলেন, 'এ কাজটি আমি যে করব, তা ওর জন্মের আগেই ঠিক করে রেখেছিলাম।'

বইটি সম্পর্কে দেশের কয়েকজন শিশু বিশেষজ্ঞের মতামত বইয়ের শুরুতে দেওয়া হয়েছে। তাঁদের মধ্যে প্রয়াত অধ্যাপক এম এস আকবরের মন্তব্যে বলা হয়েছে, একজন ফরাসি চিকিৎসক ১৭৫৯ থেকে ১৭৭৭ সাল পর্যন্ত তাঁর পুত্রসন্তান বেড়ে ওঠা পর্যবেক্ষণ করেছিলেন। আর বাংলাদেশি কন্যাসন্তানের বেড়ে ওঠার পর্যবেক্ষণ করার ঘটনা এই অঞ্চলের জন্য নতুন। লুৎফুল কবীর বলেন, 'সন্তানকে পর্যবেক্ষণ করার অনুপ্রেরণা আমি পেয়েছিলাম ফরাসি চিকিৎসক ডি মন্টবিলার্ডসের কাছ থেকে।'

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