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Review Articles

Allergic rhinitis, asthma and atopic diseases: Bangladesh perspective

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Abstract

Bangladesh is a developing country with 150 million population. About 20 to 25% of population is suffering from different types of allergic disorder. Few studies were carried out on asthma, allergic rhinitis and atopic conditions in Bangladesh. There are many indoor, outdoor, occupational and food allergens that trigger allergy. More over many pollutants, allergens are still unidentified in the poor and developing countries due to fund constrains for research activities. In addition to multiple known and unknown allergens, over population, un-hygienic living, poverty, lack of education and awareness, negligence to take treatment leads to increasing incidence of these diseases. Diagnostic facilities are yet depending on history and clinical examination for majority of our patients. Skin prick tests and IgE estimation are not available outside capital Dhaka as well as these are expensive too. Majority of our population can't afford them. Asthma and allergies are affecting the quality of life that has impact on national economy and development a lot. Treatment modalities and drugs available with the costs in our country are discussed. More evidence based studies and dissemination of ARIA, WHO and other guidelines to health professionals will be needed to improve the situation.

Key words: *Asthma, Allergic Rhinitis, Atopic Dermatitis.*

Introduction

Allergic diseases are prehistoric and very common. None is immune to this condition. Every person has an experience of one form of allergies in their lifetime. Incidence and prevalence of allergic lesions are increasing day by day. About more than 150 million populations are affected by asthma disorder globally[1]. This is causing a tremendous strain on health resources in many part of the world. It is also a main cause of hospital admission for chronic diseases in children as well as in adults. There is also a huge financial involvement to treat the allergic diseases.

Epidemiology and Statistics - Allergy, Asthma, Food Allergy, Occupational Allergy:

Bangladesh is a developing country with about 140 million population and per capita income of 470 USD per annum. In our country, about 45 – 51% people live in poverty, of these 20 – 25% are in extreme poverty[2 - 4]. Population density in our country is 928 per square kilometer. Hospital bed and population ratio is 1: 3500, and doctor patient ratio is 1: 3866. Total health expenditure is only 6.6% of our total budget [5].

First National Asthma Prevalence Study (FNAP) in Bangladesh in 1999, showed that about 7 million people (5.2% of the population) are suffering from current asthma in at least three episodes of asthma attack in one year; more than 90% of whom do not take modern treatment[6, 7]. Half of these patients are innocent children in 7.4% of the total paediatric population (1-15 years of age group). A significant number of patients die every year, although 80% of such death can be prevented by modern management which includes patient education. It is estimated that over 20 - 50% of the world's population suffer from IgE mediated allergic disease such as asthma, rhino-conjunctivitis, eczema & anaphylaxis. Epidemiological, immunological and clinical studies showed that there is strong correlation between allergic rhinitis and asthma. Epidemiologically, up to forty per cent of allergic rhinitis patients also have asthma, and up to eighty per cent of cases with asthma are related to nasal condition[8 - 9].

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The prevalence of allergic diseases is about 20% in our country[6, 7]. The nationwide asthma prevalence study had shown that the prevalence of asthma (attacks of wheeze in the last 12 months) was 7.6%. The ISAAC study in the schools of Dhaka has confirmed that the problem of asthma & other atopic conditions are very large in child population of our country. The prevalence of asthma (recent wheeze) is also 7.6%, allergic rhinitis 20% & atopic eczema 6.5%[7]. Food hypersensitivity reactions are affecting about 2.5% of the general population[10]. Food allergy is about 6 – 8% in our country[11]. There is no data on occupational allergy was available in the med line search at Bangladesh Medical Research Council and National Medical Library.

Methods of diagnosis:

1. History –
   Personal, Family and occupational history should be taken in details.
2. Clinical examination:

a. Anterior rhinoscopy
b. Fibre optic laryngoscopy (FOL)
c. Chest, skin & other system examination

3. Investigations:

a. Serum IgE and other immunoglobulin level estimation
b. Skin prick test
c. Nasal smear for IgE
d. Lung function test for asthma

Who treats Allergic rhinitis, asthma, food allergy, anaphylaxis, atopic dermatitis, occupational allergies, and allergic conjunctivitis in our country:

In Bangladesh allergic diseases are treated by general physicians, and specialists in internal medicine, paediatric, otolaryngology, ophthalmology, dermatology, chest disease respectively. Alternative medical services like homeopath, herbal, ayurved, hamdard are also available in our country. These are less expensive and are available in remote villages.

Data on indoor and outdoor allergen and their impact on allergic diseases in our country:

Common triggers of allergies are -

A. Indoor allergen: House dust mites, Dander, Molds, Insects
B. Outdoor allergen: Pollens, molds
C. Food Allergens: Beef, prawn, hilsha fish, sea foods, duck egg, some vegetables, nuts, and preservatives added to food etc.
D. Irritants: Tobacco smoke, wood smoke, strong odours, perfumes, cosmetics, paints etc.
E. Smoke and toxic gases from automobiles and factories.
F. Certain drugs: Aspirin, NSAIDs etc.
G. Occupational and latex[6, 8]

Impact on quality of life:

There are little studies done on allergic diseases in our country. School performances or office missed has not yet been quantified due to allergic diseases in Bangladesh. It affects 1 in 5 Australians and has a major impact on quality of life, mood, learning and work performance. Allergy interferes with learning in children and causes significant personal distress, sleep disturbance and social embarrassment[12].

Drugs available & costs of drugs:

The following drugs are available in Bangladesh for treatment of allergic diseases & asthma:

1. Oral H_1- receptor Antihistamines:

a) First Generation – Chlorpheniramine, BDT- 2.00 per ten tablets, Ketotifen BDT - 1.50, Azelastine spray – BDT 180.00
b) Second Generation – Cetirizine - BDT 2.50, Fexofenadine -120 mg – BDT 6.50, Loratadine - BDT 3.00.
c) New Products – Desloratadine – BDT 2.50, Levocetirizine - BDT 2.50

2. Intranasal Corticosteroids:
   Beclomethasone - BDT 125.00, Fluticasone – BDT 250.00, Mometasone –BDT 250.00, Triamcinolone – BDT 200.00, Budesonide – BDT 280.00,
3. Oral corticosteroids: Dexamethosone, Prednisolone, Betamethasone, BDT 5.00 to 10.00 per ten tablets.
4. Local chromones:
   Chromoglycate – Drop BDT 65.00
5. Oral decongestants:
   Psuedoephedrine – BDT 2.00
6. Intranasal decongestants:
   Oxymetazoline – BDT 8.00, Xylometazoline – BDT 8.00
7. Anti leukotnienes:
   Montelukast – 5mg BDT 10.00, 10 mg BDT 20.00, Zafirlucast – BDT 26.00

Drugs for asthma:

A. Bronchodilators:

1. β- Agonist – Salbutamol - BDT 140.00 spray, Salmeterol – BDT 180.00 spray,
   Salbutamol tablet and suspension are also available.
2. Xanthine derivatives:
   Theophylline – BDT 4.00
   Aminophylline – BDT 1.00, Aminophylline injection – BDT 10.00
2. Anticholenergic bronchodilators:
   Ipratropium bromide – BDT 150.00 per spray,

B. Anti inflammatory agent:

1. Steroids:
   Hydrocortisone, Prednisolone, Beclomethasone, Fluticasone, Budesonide,

   Seretide inhaler,
   Prices range from BDT 250.00 to BDT 1100.00.

   Atopic Dermatitis Drugs:

A. Systemic Antihistamine

B. Steroids Local ointment
   Fluticasone propionate, Hydrocortisone preparation,
   Eumovate ointment / cream – BDT 40.00
   Cutivate ointment - BDT 75.00, Cream – BDT 96.00

C. Tacrolimas Group:

Tacrol - 0.03% 5gm - BDT 80.00, 10gm – BDT 200.00

BDT – Bangladesh Taka, One US Dollar is equivalent to seventy BDT only. Costs cited above are according to the Information Medical Statistics (IMS) per tablet / per unit product. IMS report showed that the market size in Bangladesh in 2006 for chlorpheniramine is BDT 125,306,256 only[13].

Treatment Modalities:

The following treatment modalities are available in Bangladesh:

1. Avoidance of allergens: Whenever possible
2. Medications: Available list of drugs are already mentioned
3. Immunotherapy – There is no Government or private hospital based immunotherapy treatment facilities available in Bangladesh. Only few doctors are giving immunotherapy treatment at their private set up in Dhaka. In developing counties immunotherapy is not advocated because there are many allergens yet to be identified & highly trained manpower is required to practice immunotherapy.
4. Health education
5. Nasal surgery if indicated.
6. Alternative medicines are also available in Bangladesh.

Health Insurance System:

Health insurance for individual in Bangladesh is not so popular in Bangladesh. But a few corporate level insurance for employees are available in our country. Some life or health insurance facilities are present for individual in case of natural death, or for some crippling diseases like stroke, heart attack, cancer etc or for any diseases need hospital admission. Doctor visits, medications and investigation costs are not covered by the existing health insurance services in Bangladesh.

Discussion

Allergic rhinitis is one of the most common diseases in the general population. It can cause significant discomfort, which impacts negatively on quality of life. The first evidence based guidelines for allergic rhinitis recently developed by international experts in association with the World Health Organization (WHO), which are helping health professionals reduce the considerable morbidity and disability related to this condtion[8,14 -16]. In Bangladesh, ARIA – WHO pocket guidelines for health professionals is translated in Bengali by the authors of this article and distributed to physicians all over the country. Bangladesh Society of Allergy & Immunology (BANSAI) was formed four years ago with direct initiative of Professor Dr. Ruby Pawankar of Nippon Medical School, Tokyo, Japan. The society is doing many activities in different fields of the allergic conditions. There are societies like Asthma Association of Bangladesh and some specialty associations are contributing in the awareness and several aspects of allergy, asthma and atopic diseases.

Some study suggests oral antihistamines as the first line treatment in allergy with intranasal corticosteroids used sequentially or in combination to control symptoms over the long period. The “allergy march” hypothesis is now well accepted by many allergy experts, which explains the strong link and

characteristic sequence of a number of allergic diseases starting with eczema in infancy and childhood, followed by allergic rhinitis and then the manifestation of asthma [16 - 18]. Allergic rhinitis is a known risk factor for later development of asthma and treating allergic rhinitis has been shown to improve asthma symptoms[9, 19]. In Bangladesh, the health care system is massively under funded and inadequate, and there is a desperate need for funding to provide a system accessible to all. It is interesting and enlightening to see how disease is managed with fewer resources and there is also variation in aetio-pathology from that in the developed countries.

Health insurance is available in our country, but do not cover majority of our population. Bangladeshi Nobel Peace Prize winner in 2006, an economist Professor Dr. Muhammad Yunus, the Father of Micro-credit is going to introduce health insurance for the 6.5 million members of his Non-Governmental Organization, Grameen Bank.

Skin prick test facilities are not available in any government or private hospitals. Very limited capital Dhaka based private chamber oriented facilities are available. IgE estimation, FOL, Skin prick tests are expensive and are performed only in some private centres in Dhaka only. Majority of our patients can't afford these costly tests. Moreover, people are reluctant to do laboratory tests for allergic diseases except in severe cases.

In Bangladesh, the clinical management of patients with allergic rhinitis includes, avoiding factors that cause symptoms, using appropriate medications, and educating the patient, ensuring follow-up. Pharmacotherapy like antihistamines, decongestants, corticosteroids, chromones, and other drugs are available in our country. Immunotherapy facilities are very limited in Bangladesh. Nasal surgery is done if indicated in selected cases and the surgeries are cautery, submucosal diathermy, turbinectomy, polypectomy and functional Endoscopic Sinus Surgery (FESS).

Allergic rhinitis is estimated to affect as many as 40 million people in the Unite States on a regular basis, and even more individuals who have occasional symptoms. The diseases associated with a considerable burden on the health care system, accounting for a total of $7.9 billion in direct medical and indirect costs mostly related to reduce work and productivity in 1997, with significant adverse effects on patient's quality of life, including disturbed sleep and impaired function at work and school. Allergic rhinitis is responsible for 3.8 million days lost each year from work and school in the United States[20 - 21]. According to the IMS report, the market size in Bangladesh in 2006 for chlorpheniramine is about BDT 12.5 crores only[13]. Only one medicine is incurring huge financial involvement in a poor and developing country like Bangladesh. So the total management cost of allergic disorders is very expensive. Alternative medicines are availed by vast majority of our population. As these are easily available in distant areas all over the country and are very low priced.

Conclusion

Allergic diseases are often regarded as a trivial condition, but the persons it affects know it causes significant discomfort and impairs many everyday activities. Effective treatment is available and medical professionals should take advantage of the refinements in characterization of the disease to use it more widely in cases to relieve symptoms and improve quality of life. In developing countries the ARIA and other guidelines should be disseminated to all health workers by organizing workshop, seminar, symposium etc. More evidence based research activities in different aspects of allergic diseases should be carried out.

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