PROFILE OF PATIENTS PRESENTING WITH BRONCHIAL ASTHMA IN A TERTIARY HEALTH CENTRE

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ABSTRACT

BACKGROUND
Asthma is a condition that likely results from complex interactions between multiple environmental and occupational factors. The present study was intended to know the age of one set of bronchial asthma, the risk factors and the prophylactic medicines used to control the bronchial asthma in all the patients attending to the Asthma Clinic.

MATERIALS AND METHODS
The present study was a retrospective analytical study for one year from March 2015 - March 2016 in a tertiary health centre in Guntur, A.P.

RESULTS
Twelve hundred and forty six (1246) patients suffering with asthma and who attended our outpatient's OPD over a period of one year from March 2015 - March 2016 in our tertiary health hospital were selected at random and interviewed by means of an asthma questionnaire according to Global Initiative for Asthma guidelines are included in our study. The majority were unskilled labourers, agricultural and fishery workers (27%) followed by housewives (21%) and school children (19%). Most of the cases of asthma (61) occurred among male children of age less than 10 years of age, whereas in 54 female patients age of onset of asthma were less than 10 years. The next peak occurs in the 21 - 30 age group (377 patients) and then in the 31 - 40 age group, where 353 of cases occurred; 11% of the patients were taking inhaled steroids and beta agonists and majority of the patients were not taking any medicines.

CONCLUSION
The present study provides valuable information on the age of onset of the bronchial asthma and certain exposure risk factors, which can be utilised for preventive measures to be taken in the future.

KEYWORDS
Bronchial Asthma, Global Initiative for Asthma (GINA), GINA Questionnaire, Bronchial Asthma Control.

in females. Reasons for gender differences are unclear and largely unexplored. Possible explanations include:

1. The greater prevalence of atopy (i.e. evidence of IgE sensitisation to allergens) in young boys.
2. Reduced relative airway size in boys compared to girls. Smaller airway size may also contribute to the increased risk of wheezing after viral respiratory infections in young boys compared to girls.
3. Differences in symptom reporting between boys and girls.

Familial History of Asthma
There are clearly components of the asthma phenotype that appear strongly heritable, although these inherited components do not follow the simple Mendelian pattern and the specific genes responsible for these inherited components are yet to be identified.

Atopy and Allergens
Atopy may be defined as the state of having IgE antibodies to specific allergens, which is a prerequisite for developing allergic disease. The association between asthma and other atopic conditions is well-documented. The “atopic march” is a term used to describe the pattern of onset of different allergic diseases that is observed in some atopic individuals. This pattern begins with atopic dermatitis in infancy and childhood followed by the onset of allergic rhinitis and then asthma during later childhood and adolescence. Not all atopic patients develop all three conditions (eg: only about one-third of children with atopic dermatitis subsequently develop asthma) and there are other patterns of presentation of allergic diseases; however, these conditions are clearly associated.

Allergen Exposure
A consensus is emerging that indoor allergens play a significant role in the development of asthma and recurrent wheeze in children. However, it has been difficult to demonstrate a causative relationship and the majority of these studies were performed on high risk groups. At least one prospective study of allergen exposure in early childhood, carried out with a cohort from the general population found that although a minimum threshold level of allergen was necessary for sensitisation or asthma to develop, there was no dose-response relationship above that level.

Sources of indoor allergens include house dust mites, animal proteins (eg, mouse, cat and dog allergens), cockroaches and fungi. Changes that have made houses more “energy-efficient” over the years are thought to increase exposure to these allergens, thereby playing a role in the increasing prevalence of asthma.

House Dust Mite
In many areas, sensitisation to the House Dust Mite (HDM) appears to have an important association with asthma, potentially contributing to between 65 percent and 90 percent of cases among children and young adults.

Mold
In the middle and Western United States where levels of dust mite allergen are low, sensitisation and exposure to the ubiquitous mold Alternaria appears to be important for the later development of asthma.

Cockroach Allergen
Sensitisation to cockroach allergen has been shown to be a significant risk factor in the development of asthma. In addition, morbidity from asthma in children is associated with the presence of cockroach allergy and exposure to high levels of cockroach allergen in bedroom dust.

Animal Allergens
Early life exposure to indoor cat and dog allergens has been found to be both associated with and protective against the development of asthma. It is possible that other exposures such as environmental tobacco smoke and pollution modulate the impact of early life animal allergen exposure providing a partial explanation for the variation in development of asthma.

Farm Animals
Exposure to farm animals early in life is negatively associated with the development of allergic disease. Whether this is due to increased exposure to allergens or increased exposure to a wide range of microbial exposures has been the subject of a number of studies.

Influence of Bacterial Exposure
Data regarding associations between allergen exposure and development of asthma are conflicting; while exposure to dust mite and cockroach allergens are associated with an increased risk of asthma, exposure to dog allergen and farm animals appears to be protective. A potential reason for the conflicting data regarding the role of allergen exposure in the development of asthma and also recurrent wheeze in children may be related to the influence of early-life bacterial exposures.

Environmental Control Studies
Studies examining the impact of environmental control measures for various allergens are hindered by several recurrent problems. Protocols in which a single allergen is targeted for reduction often fail to produce clinical benefit. This is not entirely unexpected, because most allergic individuals are sensitised to multiple allergens and it is possible that all relevant allergens must be controlled simultaneously. A large Canadian trial found that a multifaceted allergen mitigation program provided protection against some atopic conditions, although not for airway hyperreactiveness. It may also be necessary to tailor the interventions to the specific sensitivities of the patients, which is technically demanding. In addition, reductions in the allergens in question may be significant compared to control groups, but it is not known to what degree most allergens must be reduced in order to prevent sensitisation.

Occupational Exposures
Inhalational accidents (eg, fires, mixing cleaning agents, industrial spills) were also associated with an increased risk of new-onset asthma.

Pollution/Outdoor
There is a known correlation between levels of air pollution and lung disease, but the association between air pollution and asthma is less clear. It is possible that asthma is related to
specific pollutants, while other respiratory diseases are related to total air pollution.

Smoking and Exposure to Environmental Tobacco Smoke
Population-based studies appear to show a relationship between smoking and airway hyper-responsiveness. Studies have also provided evidence for an association between smoke exposure and asthma development.

Active Smoking
Several studies have demonstrated that active smoking increases the risk for developing asthma. Second hand smoke exposure is associated with the development of asthma. Maternal smoking is the most important cause of second hand smoke exposure, because of the greater exposure of the child to the mother than the father. As an example, a cross-sectional analysis of the relationship of maternal cigarette smoking to the incidence of asthma in the first year of life found that the children of smoking mothers were 2.1 times more likely to develop asthma than were children of non-smoking mothers. Similar findings were noted in another study, in which the effect of maternal smoking was found in mothers of low educational level.

Obesity
Age-adjusted prevalence rates for asthma and obesity are increasing in the United States. Experimental models, prospective cohort studies, population-based case-control studies and a meta-analysis suggest that patients with an elevated Body Mass Index (BMI) are at increased risk for developing asthma. This risk may be greater for non-allergic asthma than allergic asthma.

Asthma Control Questionnaire
GINA defined asthma control: According to clinical characteristics that include daytime symptoms, limitations of activity, nocturnal symptom/awakening, need for reliever/rescue treatment, lung function (PEF or FEV1); asthma patients were classified as controlled, partially controlled or uncontrolled.6 Thereafter, treatment management was based on the level of asthma control.

MATERIALS AND METHODS
Aims and Objectives
1. To study the clinical profile of bronchial asthma patients attending the tertiary health centre in new capital of Andhra Pradesh.
2. To study the risk factors for acute exacerbation of bronchial asthma.
3. To study the role of prophylactic drugs of bronchial asthma.

Twelve hundred and forty six (1246) patients suffering with asthma and who attended our outpatients OPD over a period of one year from March 2015 - March 2016 in our tertiary health hospital were selected at random and interviewed by means of an asthma questionnaire according to Global Initiative for Asthma guidelines. The demographic details and other relevant information were obtained from the patients.

Inclusion Criteria
1. All the patients attending the Pulmonology OPD were included in the study.
2. All the patients in the wards diagnosed with bronchial asthma were included in the study.

Exclusion Criteria
All the pregnant women were excluded from the study.

Type of Study and Statistical Methods
Prospective study for one year from March 2015 to March 2016. All the patients were included in the study after proper consent and ethical clearance.

RESULTS
Outpatients over a period of one year from March 2015 - March 2016 in our tertiary health hospital were selected at random and interviewed by means of an asthma questionnaire according to Global Initiative for Asthma guidelines. In addition, their records were checked before including in the study. The questions were related to specific factors causing a deterioration in their asthma. The object being to obtain a profile of the asthmatic patients living in the new capital of Andhra Pradesh. The information was obtained with full consent of the patient.

<table>
<thead>
<tr>
<th>Occupation of the Patients</th>
<th>Total Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labourers, agricultural and fishery workers</td>
<td>336 (27%)</td>
</tr>
<tr>
<td>Housewives</td>
<td>286 (21%)</td>
</tr>
<tr>
<td>School children</td>
<td>236 (19%)</td>
</tr>
<tr>
<td>Factory workers</td>
<td>174 (14%)</td>
</tr>
<tr>
<td>Others</td>
<td>024 (02%)</td>
</tr>
<tr>
<td>Scholars and professionals</td>
<td>099 (08%)</td>
</tr>
<tr>
<td>Crafts and Related Trade Workers</td>
<td>112 (09%)</td>
</tr>
</tbody>
</table>

| Table 1. Occupation of Participants |

The majority were unskilled labourers, agricultural and fishery works (27%) followed by housewives (21%) and school children (19%). Minority of the patients were 8% of scholars, professionals followed by craft workers (9%).

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>345 (27.6%)</td>
</tr>
<tr>
<td>Second hand smoking</td>
<td>045</td>
</tr>
<tr>
<td>Exposure to dust at school</td>
<td>124</td>
</tr>
<tr>
<td>Exposure to dust at work</td>
<td>212 (17%)</td>
</tr>
<tr>
<td>Biomass exposure (Household cooking)</td>
<td>232 (18%)</td>
</tr>
</tbody>
</table>

| Table 2. Exposure Risk Factors |

Most of the patients (232 - 18%) in our study were having biomass exposure in household cooking and 212 (17%) having history of work exposure to dust. Total number of patients having smoking history were included in the study.
Exposure to Smoke and Dust
The above study showed that 345 (27.6%) patients were smokers; 232 (18%) patients were exposed to biomass exposure in their houses.

Age Group | Male n = 411 | Female n = 835
---|---|---
< 10 | 061 | 054
11 - 20 | 024 | 134
21 - 30 | 132 | 245
31 - 40 | 121 | 232
41 - 50 | 023 | 121
51 - 60 | 046 | 043
> 60 | 004 | 006

Table 3. Gender Difference Between the Two Groups

It can be seen from Table 3 that most of the patients were from the 21 - 40 age group; 253 male patients, 477 female patients (58%) were in between this age group; 61 patients in male group were having age less than 10 years when compared to 54 female patients of the same age group. Among the total number of patients, majority 67% were female when compared to 411 (33%) of male patients.

Age of Onset of Asthma
Table 3 shows most of cases of asthma (61) occurred among male children of age less than 10 years of age, whereas in 54 female patients age of onset of asthma were less than 10 years. Then peak occurs in the 21 - 30 age group (377 patients).

Weather | Total Number of Patients
---|---
Cold weather | 41%
Hot weather | 66%
Rainy | 28%
Cloudy | 11%
Spring | 14%
Cold/Rainy | 69%

Table 4. Effect of Weather causing Deterioration in Asthma

In our present study, cold weather was associated with deterioration of asthma in 41% patients. Cold weather associated with rainy weather was also an important factor causing exacerbation of asthma symptoms in 69% of the population.

Problems | Number of Patients
---|---
Economic and Financial | 06%
Work/School | 02%
Grief | 08%
Family | 11%
Domestic | 13%
No Problems | 60%

Table 5. Patients’ Views of Problems Leading to Deterioration in their Asthma

Table 5 shows that 13% patients reported domestic problems as a major factor causing deterioration in their illness and 11% of patients complained that both financial and family problems were major factors causing deterioration of their illness. This illustrates that domestic problems are the major psycho-social factor influencing the bronchial asthma. In 60% of cases, no psycho-social factor was associated with the bronchial asthma.

Table 6. Medication of the Patients before Asthma Exacerbation

<table>
<thead>
<tr>
<th>Medication</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-agonist only</td>
<td>02%</td>
</tr>
<tr>
<td>Theophylline and Beta-agonist</td>
<td>01%</td>
</tr>
<tr>
<td>Theophylline only</td>
<td>04%</td>
</tr>
<tr>
<td>Inhaled steroids and oral Beta-agonist</td>
<td>11%</td>
</tr>
<tr>
<td>Inhaled steroids, oral steroids, theophylline and beta-agonist</td>
<td>03%</td>
</tr>
<tr>
<td>Inhaled steroids only</td>
<td>04%</td>
</tr>
<tr>
<td>Theophylline and antihistamine</td>
<td>02%</td>
</tr>
</tbody>
</table>

Table 6 shows 11% of the patients were taking inhaled steroids and beta agonists.

Majority of the patients are not taking any medicines.

DISCUSSION
Many studies in India showed varied prevalence rates among different age groups and locations ranging from 0.9% to 15.7%. A recent review analysis of 15 epidemiological studies showed that the mean prevalence of asthma among children was 7.24%. Urban and male predominance was observed in this study with wide interregional variation.

In our present study, 67% of the patients were female and occurs at all ages groups. About 9.2% of the cases develop before the age of 10. Male children were more than the female children within 10 years old. In most of the patients, the age of onset of bronchial asthma was less than 40 years old. Peak number of patients were in age group 21 - 30 years followed by 31 - 40 years. In the study, there were 64 males and 51 females in the < 10 years group. By the age of 30 the study showed 132 males and 245 females, which is in keeping with figures quoted by a leading text book of medicine, in which childhood the male: female ratio is more. This equalises by the age of 30 and reverses where there were more females than males.

This study showed increased risks of asthma among patients in a number of occupation categories such as labourers, agricultural and fishery workers where the prevalence of bronchial asthma was more (27%).

The risk of asthma was more in housewives, where majority of them use biogas. In our study, 21% of the housewives are suffering from asthma. The risk of bronchial asthma is low among scholars, professionals and trade workers.

In our present study, 40% of patients indicated some problem contributing to the deterioration of their disease; 13% of patients reported problems at domestic home; 11% had family problems; 2% problems were at work or school and 6% had financial and economic problems.

In the study 41% associated cold weather with the deterioration in their asthma; 28% associated this with rainy weather and 14% with spring; 6% of the patients reported that hot weather made their asthma control worst. Overall, 69% of
the patient’s symptoms were worst in cold and rainy season, which caused an exacerbation asthma. Most of the patients were not taking any medications. Medications were stopped without valid reasons. Patients were not using the correct manner of usage of their inhalers and the importance of regular usage. Self-management plans of as-mentioned in the literature were non-existent and followed by the patients. Many of the patients were using the medications in suboptimal doses. Among the patients, only 11% of the patients were using inhaled steroids along with oral bronchodilators; 3% of the patients were taking oral steroids even without doctor’s advice. 4% of the patients were taking only oral theophyllines; most of the patients are not taking any medicines.

**CONCLUSION**

Present study provides valuable information on the age of onset of the bronchial asthma and certain exposure risk factors, which can be utilised for preventive measures to be taken in the future. Occupational risk factors, active smoking and passive smoking play an important role in the control of disease. The above study showed that the knowledge about the prophylactic use of asthma medication is essential for the prevention of exacerbations of asthma.

**REFERENCES**