

CLINICAL PROFILE OF CHILDHOOD ASTHMA AND ITS COMORBIDITIES.

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ABSTRACT

Background. Bronchial asthma is a heterogenous disease characterized by chronic airway inflammation. It is defined by history of various respiratory symptoms such as wheeze, shortness of breath, cough and chest tightness that may vary over time and intensity with variable, expiratory airflow limitation. Objective. To evaluate clinical profile of childhood asthma and its association with risk factors at our tertiary care hospital. **Methods.** Prospective observational study was conducted at Department of Pediatrics at Pacific Medical college and Hospital, Udaipur, India. **Results.** Out of total 202 children included in the study, 131 (64.9%) were males and 71 (35.1 %) were females. In present study, 65 children (32.2 %) had mild persistent asthma. History of exposure to passive smoking at home obtained in 24 children that constitute 11.9 % children of this study. In this study, 55% of children in this study had at least one of the above as trigger factor. **Conclusion.** When there is the above 2 risk factors i.e. family history of asthma as well as exposure to aeroallergens, there was an increased risk of moderate to severe asthma. A comprehensive management strategy which includes change in environment wherever possible, attending to risk factors and judicious use of medications can ensure us normal life style and prevents school absenteeism in children and financial stress to the family.

Keywords: Asthma, childhood, airway, Aeroallergen.

INTRODUCTION

Asthma is an important cause of chronic morbidity and mortality among diseases in childhood (1). Bronchial asthma is a heterogenous disease characterized by chronic airway inflammation, it is defined by history of various respiratory symptoms such as wheeze, shortness of breath, cough and chest tightness that may vary over time and intensity with variable, expiratory airflow limitation (2). It has increased prevalence in the past 15 years in children. It affects 1- 18% of population in different countries. About 300 million people of all age groups belonging to different ethnic groups over the world were affected with asthma. According to recent statistics, 14% of children over the world experience symptoms of asthma (3).

In India, there are wide variations region wise in prevalence of childhood asthma. Rural children were

found to be more affected than children living in urban areas with varied geographical differences (4). It is a major burden to parents and also it carries serious impact on families, health care systems and government. Bronchial asthma is an important cause of school absenteeism in children (5). Genetic predisposition along with environmental factors such as industrialization, air pollution and tobacco smoke contribute to childhood asthma. The increase in various allergic disorders such as allergic rhinitis, eczema as well as atopic sensitization eventually contributes to increased asthma prevalence in children (6).

Children with history of atopic dermatitis, allergic rhinitis, eczema, exposure to passive smoking, cesarean delivery, use of heating in winter, decorating materials on wall may pose increased risk

for asthma (7). Hence a number of factors are responsible for both the onset or exacerbations of bronchial asthma. Thus, it is essential to identify the risk factors and clinical profile of bronchial asthma in children, so that they can be effectively managed. Hence present study was conducted to evaluate clinical profile of childhood asthma and its association with risk factors at our tertiary care hospital.

MATERIALS & METHODS

The present prospective observational study was conducted at Department of Pediatrics at Pacific Medical College and Hospital, Udaipur. The study duration was March, 2019 to February 2020. All children aged 3-15 years, diagnosed to have Asthma as per GINA guidelines 2014, which are being followed up in the department of pediatrics as out-patient or admitted for in-patient care. Institutional Ethics Committee Clearance was obtained before start of study and written and informed consent for the procedure was obtained from all the patients. Strict confidentiality was maintained with patient identity and data and not revealed, at any point of time.

Children of age <3years, children with congenital cardiac and lung abnormalities, neurologically impaired children were excluded from the present study. Children who meet the criteria are enrolled. Clinical data of these children collected using a proforma sheet. Spirometry was done as per discretion of the treating unit and in children who could co-operate and complete the spirometry study. All the data was recorded on Microsoft excel spread sheet and data analysis was done at 10% alpha and 90% confidence interval using SPSS v22 software. Test of significance were applied on collected and organized data and p value less than 0.05 was considered as statistically significant association between study variables.

RESULTS

In present study, Out of total 202 children included in the study as per the criteria, 131 children (64.9%) were males and 71 children (35.1 %) were females. Out of 202 children studied, mean age was distribution is 6.6089 years. 65 children which make 32.2 % were under 5 years. 93 children which constitute 46 % were under the age group of 5 to 9 years. 44 children which forms 21.8 % of study group were more than 10 years of age. Out of 202 children studied, 65 children (32.2 %) had mild persistent asthma, 63 children (31.2 %) had

moderate persistent asthma, 18 children (8.9 %) had severe persistent asthma, 56 children (27.7%) had mild intermittent asthma. (Table 1)

Table 1: Distribution of study subjects based on asthma severity as per naepp/epr2 guidelines of asthma.

Severity of asthma	Frequency	Percent
Mild Persistent Asthma	65	32.2
Moderate Persistent Asthma	63	31.2
Severe Persistent Asthma	18	8.9
Intermittent Asthma	56	27.7

Table 2: Distribution of study subjects according to H/o Aeroallergen exposure.

H/o Aeroallergen exposure	Frequency	Percent
None	102	50.5
H/o of dust exposure	74	36.6
H/o exposure to pets	26	12.9
No H/o Passive Smoking at home	178	88.1
H/o Passive Smoking at home	24	11.9

In the present study, among 202 children studied, exposure of dust at home, constructions etc. Have been in 74 children (36.6 %). History of pet exposure at home; Among 202 children, History of exposure to pets (cat, dog and others) were obtained in 26 children (12.9%).

Among 202 children, no exposure to either dust or pets in 102 (50.5 %) children. Among 202 children studied, history of exposure to passive smoking at home obtained in 24 children that constitute 11.9 % children of this study. There was no history of

passive smoking at home in 178 children which constitute 88.1 % children of the study. (Table 2).

Table 3: Distribution of study subjects according to the history of aeroallergen and severity of asthma.

	Moderate and severe asthma	Mild and intermittent asthma	Total	P value
History of Aeroallergen	52 (64.2%)	59 (48.8%)	111	0.031*
No History of Aeroallergen	29 (35%)	62 (46.3%)	91	
Total	81	121	202	

In the present study, out of 202 children, History of aeroallergen exposure (dust, pets and passive smoking) observed in 55 % children. No history of aeroallergen exposure observed in 45 % children.

History of aeroallergen exposure associated with higher risk of severe asthma (moderate persistent asthma and severe persistent asthma). It is statistically significant. Odds ratio = 1.88 with 95% C.I (1.06 - 3.36) (Table 3).

In the present study, out of 202 subjects in the study, 22 (10.9%) had family history of asthma in father, 29 (14.4 %) of subjects had family history of asthma in mother , 30 (14.4%) subjects had family history of asthma in grandparents and other second degree relatives, 9 (4.5 %) subjects had family history of asthma in siblings.

No family history of asthma in 112 subjects (55.4 %). Family history of asthma in first degree relatives in 60 subjects (29.7%) Family history of asthma in second degree relatives in 30 subjects (14.9 %). History of any risk factor including family h/o, aeroallergens associated with higher risk of severe asthma (moderate persistent and severe persistent). It is statistically significant. History of risk factors which includes family history, dust exposure ,passive smoking , pets etc . observed in 77 % children. No history of any risk factors observed in 23 % of asthmatic children. Odds ratio = 2.25 with 95% C.I (1.08 - 4.66) (Table 4).

Table 4: Distribution of study subjects according to history of any risk factor in severity of asthma.

	Moderate and severe asthma	Mild and intermittent asthma	Total	P value
History of Any risk factor	69/81 (85.2%)	87 (71.9%)	156	0.027*
No History of Any risk factor	12 (14.8%)	34 (28.1%)	46	
Total	81	121		

DISCUSSION

In present study, Among the 202 children included in the study, 131 (64.9%) were males and 71 (35.1 %) were females. Boys have higher incidence of asthma compared to girls in this study. These results were consistent with the other studies in asthmatic children. Study done by Balaji MD et al showed out of 100 asthmatic children who were studied , 68 % of them boys and remaining 32 % were girls (9).

Study done by Mohammad AMIR et al in a hospital based study showed prevalence of asthma in 61.4% of boys and 38.6% of girls (10). 46% of children in our study were in age group of 5 to 9 years, while 32.2 % were below 5 years and 21.8% were above 10 years. These results were consistent with other studies. Chhabra SK Gupta et al in their study reported that prevalence of asthma is more in age group of 6-9 years which was 14.9% compared

to 8.7% in 10-12 years and with 5.5 % in the 13-15 year groups (11). In the study by Chandra Madhur Sharma et al (7) the prevalence of asthma in children in various ages as 7.04 % in 5-8 years, 7.67 % in the age group of 9 to 11 years, 9.67 % in the age group of 12 to 15 years (12).

In our study, 27.7 % cases have mild intermittent asthma, 32.2 % cases had mild persistent asthma, 31.2 % cases had moderate persistent asthma and 8.9 % cases had severe persistent asthma. Leonard B et al in their study have reported mild intermittent asthma in 6.9% of children, mild persistent in 27.9% subjects, moderate persistent in 22.4% subjects, and severe persistent in 42.9% subjects (13). In this study, 36.6 % of children had history of being exposed to dust, 12.9 % of children had pet animals at home and 11.9 % were exposed to passive smoking at home. Overall, 55% of children in this study had at least one of the above as trigger factor. In the study by Michel O et al found that common triggering factors which are the allergens were reported in the school places, where asthma occurrence was high. The severity of asthma was linked to endotoxin in dust exposure at home (14).

In our study, among the 111 children who had exposure to an aeroallergen, 47% had moderate to severe asthma, compared to 53% who had only mild asthma. Among the 81 children with moderate to severe asthma, 64% had aeroallergen exposure compared to 54% among 121 children with mild asthma. In this study 44.6 % were found to have family history of asthma; 14.4% in mother, 10.9 % in father, 14.4 % in grandparents and other second-degree relatives, and 4.5 % in siblings. About 25 % children had family history of asthma in one of the parents. The incidence of asthma in children was higher if there was history of asthma in the family more so if 25 % in one of the parents had asthma. Family history of asthma in first degree relatives was high (29.7 %) compared to that of second-degree relatives (14.9 %). This is comparable to the study by Balaji MD et al showed 51 % of family history of asthma. 16 % with mother, 11 % with father, 19 % with grandparents' history, 5 % with siblings (9).

CONCLUSION

We concluded from the present study that the boys had higher incidence of asthma compared to girls. The risk of asthma increases when there is a positive family history of asthma. When there is the above 2 risk factors i.e, family history of asthma as well as exposure to aeroallergens, there was an increased risk of moderate to severe asthma. We recommend

from the present study that a comprehensive management strategy which includes change in environment wherever possible, attending to risk factors and judicious use of medications can ensure us normal life style and prevents school absenteeism in children and financial stress to the family.

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