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EVALUATION OF RISK FACTORS ASSOCIATED WITH ACUTE SEVERE ASTHMA

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ABSTRACT

Background: Acute severe asthma is reported as one of the most common emergency conditions which results in hospitalization among children. Asthma is reported in previous studies as most distributed diseases around the world with an approximate burden of 300 million patients. In childhood age, asthma is reported to be most frequent chronic respiratory diseases. **Material & Methods:** The present prospective study was conducted at department of respiratory medicine of GCS Medical College, Hospital and Research Centre,Ahmedabad, Gujarat. The study duration was of six months from June 2016 to December 2018. A sample size of 100 was calculated at 95% confidence interval at 10% acceptable margin of error. Clearance from Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant. **Results:** In the present study, out of total study participants it was reported that among majority of cases 68% poor drug compliance was present while drug compliance was good in 32% children. This difference was statistically significant (P value <0.05). Among 74% cases house dust exposure history was present while it was negative in 26% cases. This difference was statistically significant (P value <0.05). Among 51% cases smoke exposure history was present while it was negative in 49% cases. This difference was statistically significant (P value <0.05).**Conclusion:** acute severe asthma is a preventable and treatable condition. Attack of acute asthma was found to be associated with poor drug compliance, house dust exposure and smoke exposure. Hence, education of parents and children both is necessary for prevention of acute severe asthma.

Keywords: Acute severe asthma, Children, Risk factors.

INTRODUCTION

Acute severe asthma is reported as one of the most common emergency condition which results in hospitalization among children **(1).** Asthma is reported in previous studies as most distributed diseases around the world with an approximate burden of 300 million patient **(2).** In childhood age, asthma is reported to be most frequent chronic respiratory diseases. The etiopathogenesis of asthma is reported as a chronic inflammatory disease which involves the lower respiratory tracts of the lungs. Along with inflammation there is episodic airflow obstruction also persists and it accounts for morbidity reported among children **(3)**.

The prevalence of asthma is varying from different geographical distribution, some studies conducted on its prevalence and they found prevalence of asthma ranging from 1% to 18% among population of various

countries **(4)**. In previous studies, it was reported that severity grade of asthma was divided among mild, moderate and severe. According to various reports acute attack of asthma is very common medical emergency reported among children which is result in high morbidity and mortality **(5)**. In a study it was reported that acute attack of asthma accounts for high rates of hospital emergency admissions and hospitalizations in ICU per year **(6).** In Indian scenario a previous study reported that acute attack of asthma had increase in incidence compared to previous decades **(7)**. However, not much research is available on this topic. Hence, present study was conducted to evaluate the risk factors of acute severe asthma among children.

MATERIALS & METHODS

The present prospective study was conducted at department of respiratory medicine of GCS Medical College, Hospital and Research Centre, Ahmedabad, Gujarat. The study duration was of six months from June 2016 to December 2016. A sample size of 100 was calculated at 95% confidence interval at 10% acceptable margin of error by epi info software version 7.2. Patients were enrolled from outdoor and from ward by simple random sampling. Clearance from Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant.

The data were collected by detailed history of acute exacerbation of asthma, treatment history, and general physical and clinical examination from each patient after taking the written consent. Children presenting with acute severe asthma according to Global Initiative for Asthma guidelines (GINA) were included in the study **(8).** All the enrolled study participants were subjected to routine lab investigations including CBC, eosinophil count, chest X ray, arterial blood gas analysis and electrolytes.
Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05.

RESULTS

In present study, we enrolled 100 study participants who were presented with signs and symptoms of acute severe asthma. The age of study participants was ranged from 6years to18 years. The mean age of study participants was 12.6 years. Majority of the children 47%were belonging the age group of 11-15 years which was followed by 28% children in 5-10 years age group and 25% children were in age group of 15-18 years of age. (Table 1)

Table 1: Distribution of study subjects according to the age.

Age group	Number of subjects (%)
5-10 years	28
11-15 years	47
15-18 years	25
Total	100

In the present study, out of total study participants it was reported that males were likely affected more than females in the ratio of 1.18: 1. Family history of asthma was found positive in 66% children. Raised absolute eosinophil counts (>400 cells/μL) were reported in 72% of children. (Table 2)

Table 2: Gender wise distribution of study subjects

Gender	Number of subjects (%)
Female	46
Male	54
Total	100

In the present study, out of total study participants it was reported that among majority of cases 68% poor drug compliance was present while drug compliance was good in 32% children. This difference was statistically significant (P value <0.05). Among 74% cases house dust exposure history was present while it was negative in 26% cases. This difference was statistically significant (P value <0.05). Among 51% cases smoke exposure history was present while it was negative in 49% cases. This difference was statistically significant (P value <0.05). (Table 3)

Table 3: Distribution of subjects according to Risk factors.

Risk factors	Present	Absent	P Value
Poor drug compliance	68%	32%	**<0.05**
House dust	74%	26%	**<0.05**
Smoke	51%	49%	**<0.05**

DISCUSSION

According to various reports acute attack of asthma is very common medical emergency reported among children which is result in high morbidity and mortality. In a study it was reported that acute attack of asthma accounts for high rates of hospital emergency admissions and hospitalizations in ICU per year. In Indian scenario a previous study reported that acute attack of asthma had increase in incidence compared to previous decades **(7).** In present study, we enrolled 100 study participants who were presented with signs and symptoms of acute severe asthma. The age of study participants was ranged from 6years to18 years. The mean age of study participants was 12.6 years. Majority of the children 47%were belonging the age group of 11-15 years which was followed by 28% children in 5-10 years age group and 25% children were in age group of 15-18 years of age.

Similar results were obtained in a study conducted by Celedón J et al in 2001 among children suffering from acute asthma, they included 214 school children of age group 10 to 13 years and found that sensitivity to house dust mites was associated in majority of children with asthma (p value = 0.02). they reported significant association with positive family history of asthma (p value < 0.01) **(9)**. Similar results were obtained in a study conducted by Mahdi B et al in the year 2010 among children suffering from acute asthma, they included 200 school children of age group 10 to 18 years and found that significant association with positive family history of asthma (p value < 0.01) **(10).**

In the present study, out of total study participants it was reported that males were likely affected more than females in the ratio of 1.18: 1. Family history of asthma was found positive in 66% children. Raised absolute eosinophil counts (>400 cells/μL) were reported in 72% of children. Similar results were obtained in a study conducted by Pragalatha A et al in the year 2015 among children suffering from acute asthma, they included 100 school children of age group 5 to 18 years and found that males were likely affected more than females with most common age group of 5-10 years. They found that sensitivity to house dust mites was associated in majority of children with asthma (p-value <0.05) **(11).** Similar results were obtained in a study conducted by Teach S et al in the year 2006 among children suffering from acute asthma, they included 488 school children of age group 6 to 18 years and found that males were likely affected more than females. They found that sensitivity to house dust exposure was associated in majority of children with asthma (p-value <0.05) **(12).**

In the present study, out of total study participants it was reported that among majority of cases 68% poor drug compliance was present while drug compliance was good in 32% children. This difference was statistically significant (P value <0.05). Among 74% cases house dust exposure history was present while it was negative in 26% cases. This difference was statistically significant (P value <0.05). Among 51% cases smoke exposure history was present while it was negative in 49% cases. This difference was statistically significant (P value <0.05). Similar results were obtained in a study conducted by Mitchell E et al among children suffering from acute asthma and found that sensitivity to house dust exposure was associated in majority of children with asthma (p-value <0.05) **(13)**.

CONCLUSION

We concluded from the present study that acute severe asthma is a preventable and treatable condition. Attack of acute asthma was found to be associated with poor drug compliance, house dust exposure and smoke exposure. Hence, the education of parents and children both is necessary for prevention of acute severe asthma.

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