Tripolitana Medical Journal; 2018, Vol. 7, No. 2, pp. 87 - 89

tmj

Short Communication

ISSN 2077-5628

Some Epidemiological Features of Bronchial Asthma in Benghazi Children Hospital, 2010/2011

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Received 8 July 2018/Accepted 6 October 2018

ABSTRACT

Asthma is one of the most common chronic diseases in childhood. It negatively affects children during critical periods of growth and development, which leads to increased annual cost of treating childhood asthma.
This study aimed to determine some epidemiological features of bronchial asthma in Benghazi Children Hospital.
A descriptive cross sectional study was approached. All bronchial asthma cases admitted to Benghazi Children Hospital between January 2010 and December 2011 were included. From these cases a statistically representative sample was withdrawn. For this sample all demographic and clinical data were collected. These data were processed and statistically analyzed by SPSS version 18.
The mean age for this sample group was 4.8 years. Males had a slightly higher percentage of asthma than female. About 60% of the cases had a family history of asthma. It has also been found that there is no similarity in the peak of asthma cases admission between the years 2010 and 2011. Most of the cases were not prescribed any antibiotics showing that asthma is not misdiagnosed in this setting.
The epidemiological features of bronchial asthma in this hospital, does not differ much from that in the international literature.

Key words- *Bronchial asthma; Epidemiology; Childhood; Benghazi.*

INTRODUCTION

Bronchial asthma is one of the most common chronic diseases in childhood.[1] It may be defined as a chronic inflammatory disease of airways associated with widespread but variable outflow obstruction. It is manifested clinically with wheezing, recurrent cough, difficulty breathing, and chest tightness.[2] It is more prevalent in the high-income countries (HICs), but some low-and middle-income countries (LMICs) also have high levels of asthma symptoms.[3] It negatively affectes children during critical periods of growth and development, leading to increased annual cost of treating childhood asthma.[4] Despite the fact that pediatric asthma has become an important public health problem, the major determinants of childhood asthma are still unknown. Familial/genetic role for etiology is the most important factor. Those who persist to have wheezing at 6 years, who have history or tests suggestive of asthma-related allergies or atopy or have a positive family history of asthma, are more likely to have persistent symptoms until late childhood or even adult life. Environmental factors are also important and the most preventable predisposing factors. The common environmental triggers are cigarette smoke, animal proteins, pet-related biological matter and dust mite. Environmental agents work in synergy with viral infections to alter reactivity of the airways.[5]

The probability of children having asthma-like symptoms is estimated to be between 5% and 12% with a higher occurrence in boys than girls and in children whose parents have an allergic disorder. Between 30% and 70% of children will become symptom free by adulthood. However, individuals who develop asthma at an early age do have a poorer prognosis.[6]

According to Word Health Organization (WHO) statistics, bronchial asthma affects 300 million people.[7] About 80% of asthma deaths occurred in low and lower-income countries, worldwide, the burden of asthma on the economy exceeds that of tuberculosis and Human Immunodeficiency Virus (HIV) combined.[8]

These costs are directly related to the severity of disease. Even though patients with severe asthma constitute only 20% of the total asthma population, they are responsible for 50% of the cost of disease.[3] Asthma is considered to be one of the consequences of western civilization, and appears to be related to a number of environmental factors. Air pollution resulting from industrial sources and transport may interact with smoking, dietary and other factors to increase the incidence of this debilitating problem.[9] The study was conducted to determine some epidemiological features of bronchial asthma in children in Benghazi.

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MATERIALS AND METHODS

The study was cross-sectional type, conducted at Benghazi Children Hospital during period from January 2010 and December 2011. Out of 33285 pediatric admissions in the two years only 315 cases had asthma. The cases were extracted from hospital electronic files, where all asthma cases were coded with International Coding of diseases (ICD-10) system as (J45-9 Status Asthmaticus). A representative sample (142 cases) was selected randomly out of total asthma cases. Demographic data such as, age, gender, residence and date of admission; the medical history of these cases including symptoms of asthma, family history, history of smoking in the family, treatment were collected from file records. The collected data was processed using Microsoft excel win 2007, and statistically analyzed using SPSS version 18.

RESULTS

Out of total 33285 pediatric admissions in the two years (2010/2011) only 315 had asthma. Proportional bronchial asthma admission rate during the year 2011 was higher than 2010 (Table1).

Table 1: Total and proportional admissions of pediatric cases in Benghazi Children Hospital (2010/2011)

Admissions	2010	2011
Total pediatric admissions	17043	16242
Total admitted respiratory cases	367	217
Total admitted bronchial asthma cases	123	192
Proportional respiratory cases admission	2.1%	1.3%
Proportional Bronchial Asthma admission	33.5%	88.4%
Proportional of Br. Asthma cases from total admission	0.72%	1.2%

Mean age of asthmatic cases was 4.8±3.65 year, 80.3% of the cases were 7 years or younger, female to male ratio was 1:1.2 and most of the admitted cases were from Benghazi (Table 2).

Table 2: Demographic characteristics of bronchial asthma cases in Benghazi Children Hospital (2010-2011).

Character	No.	%
Age (yrs.)		
0 - 3	68	47.9
4 - 7	46	32.4
8 -11	19	13.4
12 - 15	8	5.6
16 -18	1	0.7
Gender		
Male	77	54.2
Female	65	45.8
Residence		
Benghazi	122	85.9
Outside Benghazi	20	14.1

Results demonstrated that, the most of the cases had a family history of asthma, while about 30% of the cases did not. However, interestingly about 10% of cases had no registered history (neither positive nor negative) (Figure 1).

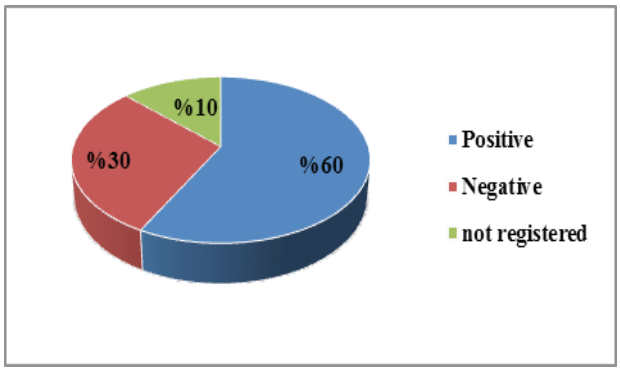

Figure 1: Distribution of cases according to family history of asthma.

Regarding the distribution of cases according to month of admission in both years, the highest peak is seen in February and January 2010, while in 2011 it is noticed that most of the cases were admitted in May, September, and November (Figure 2).

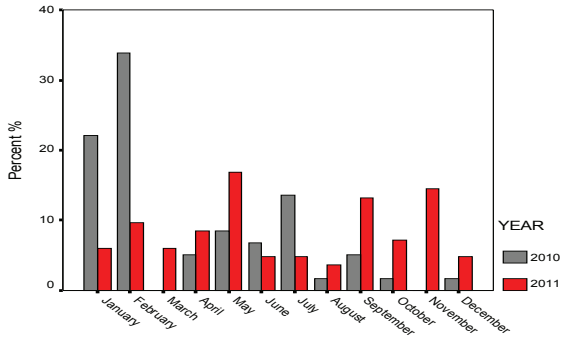

Figure 2: Distribution of cases according to month of admission in both years.

More than 80% of cases were prescribed no antibiotics during treatment, showing that they were not miss-diagnosed as bacterial infections (Figure 3).

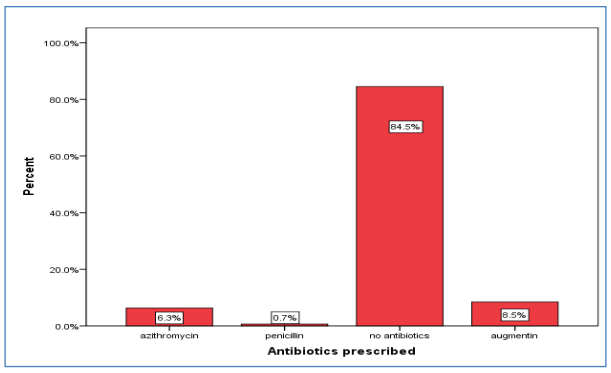

Figure 3: The distribution of the cases according to antibiotics prescribed

DISCUSSION

Asthma is a disease that negatively affects children during critical periods of growth and development, leading to increased annual cost of treating childhood asthma.[7] In the present study, it has been found that most of the asthmatic cases were of the younger age groups, which was not widely different from other international studies achieved by Masoli M, et al (2004).[10]

From the collected data it was found that the frequency of asthma in males was slightly more than that in females. Similar results, confirming this study, were illustrated by WHO (2018)[8] and de Marco R, et al (2000).[11]

The percentage of patients from outside Benghazi was around 14.1%, which is not a small proportion, showing the wide range that this hospital covers. A very small proportion of the cases received antibiotics, which indicates that antibiotics are not over-prescribed and bronchial asthma is not misdiagnosed, which may be the case elsewhere as reported by Annemiek E, et al (2005).[12]

It has also been found that there is no similarity in the peak of asthma cases admission between the years 2010 and 2011, but it was noticed that the ratio in 2011 was less than 2010. Knowing that it was a period of war, this can be ascribed to that children did not go school in the year 2011.

The main limitation in this study was the incomplete information in the patient files about many aspects e.g., (history of smoking in the family, family history, personal history of atopy). This lead to difficulties in collecting enough samples where only 40% of data were available from the files in the Benghazi Children Hospital.

CONCLUSION

The epidemiological features of bronchial asthma in this hospital, did not differ much from that in the international literature, most vulnerable age group was less than 7 years, more among male, with positive family history positive. Another significant finding of this study is that antibiotics were not over-prescribed for asthmatics, which is a good indicator of not misdiagnosing asthma in this Hospital.

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