MEDICAL CHANNEL

Original Article

SEVERITY OF ASTHMA ASSESSEMENT IN CHILDREN 5-14YEAR OF AGE BY GLOBAL INITIATIVE FOR ASTHMA (GINA) CLASSIFICATIONS

1. **GHULAM RASOOL BOUK**
2. **SHANKAR LAL**
3. **ARBAB ALI JONEJO**
4. **SAIFULLAH JAMRO**

1. ***Assistant Professor***
   Paediatrics
   Shaheed Mohtarma Benazir Bhutto Medical University & GMMMC Children Hospital, Sukkur.
2. ***Medical Officer***
   Shaheed Mohtarma Benazir Bhutto Medical University & CMC Children Hospital, Larkana.
3. ***Assistant Professor***
   Paediatrics
   Shaheed Mohtarma Benazir Bhutto Medical University & CMC Children Hospital, Larkana
4. ***Professor of Paediatrics***
   Shaheed Mohtarma Benazir Bhutto Medical University & CMC Children Hospital, Larkana

Correspondence:
DR. GHULAM RASOOL BOUK
Shaheed Mohtarma Benazir Bhutto Medical University & GMMMC Children Hospital, Sukkur.
Mobile: 0300-2302403
E-mail: gr.bouk@gmail.com

ABSTRACT:

Objective: The objective of this study was to assess the asthma severity in newly diagnosed children 5-14 years of age by applying Global initiative for asthma.
Material Method:
Study Design: Descriptive (case series) study.
Study Setting: Paediatric outpatient department of Chandka Medical College Larkana during the period of Six month from April to Sept 2008. One hundred ninety two asthmatic children were included in this study on the bases of P=7.8%and 95% confidence level with d=3.8%.
Sample Technique:- Non-probability purposive.
Responses were analyzed using descriptive statistics by SPSS-15.
Results: Out of 192 patients there were 116 (60.4%) males and 76 (39.6%) females. According to the analysis of peak expiratory flow 62(32.3%) had ?80% of predicted, 101(52.6%) had ?80%, 25(13%) had ?60%?80% and 4(2.1%) had ?60% of predicted. 59(30.7%) had mild intermittent asthma, 102(53.1%) had mild persistent, 27(14.1%) had moderate persistent and 4(2.1%) had severe persistent asthma.
Conclusion: We concluded the asthma severity as per Global Initiative for Asthma (GINA) guideline in out door patient of age 05-14 years in descending frequency as Mild persistent, Mild intermittent, moderate persistent, and severe persistent respectively

Key Words: Asthma, PEF, GINA,

INTRODUCTION:

Asthma is a serious health problem throughout the world. The prevalence of asthma is increasing in most countries, especially among children. Pakistan is no exception and according to some reports, up to 4% of children attending out patient department suffer from bronchial asthma. Asthma is chronic inflammatory disorder of airway characterized by obstruction of air flow, which may be completely or partially reversed with or without specific therapy. Airway inflammation is result of interaction between various cells, cellular elements and cytokines.

In susceptible individuals airway inflammation may cause recurrent or persistent bronchospasm, which causes symptom including cough, wheezing, breathlessness and chest tightness particularly at night and after exercise.

Global initiative for asthma (GINA) was launched in 1995 as collaborative efforts between National Heart, Lung, Blood Institute (NHLBI) and World Health Organization (WHO) GINA.

New update of GINA guidelines was recently available and it is based on asthma severity. These guidelines are prepared in order to reduce global burden of asthma, when practically applied. [iii,v] National asthma education and prevention program, Expert Penal Report II (EPR2) is a term used by American GINA guidelines for diagnosis and management of asthma, classify asthma according to severity in to four different categories, mild intermittent, mild persistent, moderate persistent, and severe persistent according

to frequency and severity of symptoms and pulmonary function.
Bronchial asthma is a major public health problem and one of leading chronic illness, affecting more than 300 million peoples in worldwide. The incidence of asthma in rising 5-12%/year all over the world especially in children. Studies over past few decades suggest that morbidity and mortality from asthma are on rise.[3]
In a study on childhood asthma in Lahore, the patients' ages of presentation were 1-5yrs (43.84%) and 5-15yrs (47.58%). The common presenting symptom were wheeze (96.83%), day time cough (98.88%), night time cough (74.81%) and shortness of breath (65.49%).
Main object of Gina guidelines for assessment of severity of asthma is to improve the long-term management, by which reduce the chronic symptom, minimal exacerbation, no emergency visits, minimize the need of beta-2 agonist, no limitation of activity and near normal peak expiratory flow. This study will provide the severity burden, as no local data available on severity of asthma by Global initiative for asthma (GINA), so that appropriate measures could be taken by policy makers to combat the severity of asthma.

MATERIAL & METHODS

This Descriptive (case series) study at Paediatric outpatient department of Chandka Medical College Larkana Those patients who fulfilled the inclusion criteria was included in this study. 192 asthmatic children were included in this study on the bases of P=7.8%and 95% confidence level with d=3.8%. The purpose, process and course of study was explained to parents before taking informed consent. Asthma was diagnosed by researcher himself on the bases of presence of one or more symptoms like cough, breathlessness, wheeze and chest tightness, and measurement of peak expiratory flow 80% or<80% value according to height for age chart and asthma severity graded as per operational definition.[I,V,IX]
After history of above symptoms with measurement of peak expiratory flow according to height for age chart then final outcome was determined i.e. severity of asthma.
Inclusion Criteria: Children 5-14 years of age attending paediatric outpatient department as new cases of asthma with minimum duration of six month of repeated attacks of cough, breathlessness, wheeze and chest tightness.
Exclusion Criteria: Patient with pneumonia, tuberculosis, foreign body, cystic fibrosis, bronchiectasis, immotile cilia syndrome, cerebral palsy with gastroeosophageal reflux.
Data was analyzed by using SPSS (ver.15.0). Descriptive statistics, frequency, percentage was computed for categorical variables like sex, severity of asthma (mild intermittent, mild persistent, moderate persistent, and severe persistent). Mean and standard deviation was computed for quantitative variable like age of patient.

RESULT

Two hundred patients were enrolled initially and eight patients were dropped from the study because these can not fulfill the inclusion criteria.
On demographic analysis we found that, out of 192 patients there were 116 (60.4%) males as compared to this, there were 76 (39.6%) females (Table IV).
The mean ± standard deviation (SD) age of our study population was 8.7±2.4 years/months, 31(16.1%) were of 7 years followed by 28(14.6%) of 8 and 9 years each and 27(14.1%) of 10 years of age (Figure I). The mean±SD height was 48.4±5.01 inches, minimum height we found was 37 inches and maximum height was 63.5 inches (Figure II) and mean weight was 23.9±6.4 kg, minimum weight was 12 kg and maximum was 45 kilograms (Table V) (Figure III).
On analysis of clinical history we found that mean duration of illness was 13.3±5.6 months (Table V) (Figure IV). On further analysis we found that 108(56.3%) experienced symptoms more than once in a week but less than once a day, this was followed by 56(29.2%) of patients, who experienced symptoms less than once in a week, but 25(13%) of patients had symptoms daily and 3(1.6%) of patients experienced symptoms continuously (Table VI).
108(56.3%) of patients had nocturnal symptoms more than twice a month, followed by 58(30.2%) had nocturnal symptoms less than twice a month, but 23(12%) had nocturnal symptoms more than once in a week and 3(1.6%) of patients had frequent night symptoms (Table VII). 62(32.3%) had the family history of asthma (Table VIII).
According to the analysis of peak expiratory flow 62(32.3%) had ?80% of predicted, 101(52.6%) had ?80%, 25(13%) had ?60%?80% and 4(2.1%) had ?60% of predicted (Table IX).
59(30.7%) had mild intermittent asthma, 102(53.1%) had mild persistent, 27(14.1%) had moderate persistent and 4(2.1%) had severe persistent asthma (Table X).

DISCUSSION

Asthma is a chronic inflammatory disorder of the airways characterized by an obstruction of airflow, which may be completely or partially reversed with or without specific therapy. Its prevalence has been increasing in all regions of the world, especially among children, affecting more than 300 million people of all ages.
Guidelines have been developed to promote standardized methods of diagnosis and treatment of asthma. The Global Initiative for Asthma's management guide (GINA) recommends objective measurements of pulmonary function, such as spirometry or peak expiratory flow (PEF), for assessing the severity of asthma.[1]
International reference values have been published for PEF, according to age, stature and sex. However, the best way to evaluate them is by comparing patients with their previous best levels.
Some studies have questioned the true role of PEF measurements in the reduction of morbidity among asthmatic patients. Since asthma primarily affects the smaller airways, PEF will only be altered during later phases, after a significant increase in airway resistance. For this reason, it is argued that the best functional index for assessing small-airway function is the measurement of forced expiratory volume in 1 second, which is measured using a spirometer. A spirometer is a relatively high-cost piece of equipment that must be operated by a trained professional.
International comparisons of asthma prevalence, particularly those from the European Community Respiratory Health Survey (ECRHS) of asthma prevalence in adults, and the International Study of Asthma and Allergies in Childhood (ISAAC), have led to an increased understanding of the worldwide distribution of asthma. Whereas Western Europe has some of the highest prevalence rates of asthma in the world, the ISAAC study found that the prevalence of wheezing is particularly high in English-speaking countries and in some Latin American countries, such as Peru and Costa Rica. Childhood asthma is the most common chronic pulmonary disease of children. The prevalence of asthma worldwide is very variable.

TABLE IV GENDER DISTRIBUTION
n=192

Gender	Frequency (n)	Percent (%)
Male	116	60.4%
Female	76	39.6%
Total	192	100%

TABLE V DESCRIPTIVE ANALSIS OF DATA
n=192

	Minimum	Maximum	Mean	SD
Age in years/month	5.00	14.00	8.7	2.4
Height in inches	37.00	63.50	48.4	5.01
Weight in kg	12.00	45.00	23.9	6.4
Duration of illness in months	4.00	36.00	13.3	5.6

TABLE VI FREQUENCY OF DAY TIME SYMPTOMS
n=192

Frequency of day time symptoms	Frequency (n)	Percent (%)
<1time/week	56	29.2%
>1time/week	108	56.3%
daily	25	13%
continuous	3	1.6%
Total	192	100%

TABLE VII FREQUENCY OF NOCTURNAL SYMPTOMS
n=192

Night symptoms	Frequency(n) (%)	Percent
<2night/month	58	30.2%
>2night/month	108	56.3%
>1night/week	23	12%
frequent night symptoms	3	1.6%
Total	192	100%

TABLE VIII FAMILY HISTORY OF ASTHMA
n=192

Family history	Frequency (n)	Percent (%)
No	130	67.7%
Yes	62	32.3%
Total	192	100%

TABLE IX ANALYSIS OF PEAK EXPIRATORY FLOW RATES
n=192

Peak expiratory flow	Frequency (n)	Percent (%)
>80%	62	32.3%
<80%	101	52.6%
>60<80%	25	13%
<60%	4	2.1%
Total	192	100%

TABLE X ASTHMA SEVERITY ASSESSMENT
n=192

Severity of asthma	Frequency (n)	Percent (%)
mild intermittent	59	30.7%
Mild persistent	102	53.1%
moderate persistent	27	14.1%
severe persistent	4	2.1%
Total	192	100%

For example, among the 6-7 years old, the prevalence of wheezing is 4.1% in Indonesia and 32.1% in Costa Rica. In Brazil, the prevalence of asthma is 7.3% in boys and 4.9% in girls aged 6 or 7 years and 9.8% and 10.2% in 13-14 years old. In a recent study, the prevalence of asthma in different parts of India varied between 4-20%. Regarding the prevalence of asthma in Pakistani children, a research done in 1997 revealed that 10% of children were suffering from this disorder. This study was repeated in 2006 and it was found that the prevalence had increased to 18% among children of 13-14 years age groups. Epidemiological studies from other parts of the world have also confirmed that asthma prevalence is increasing in the world, especially in the developing countries. According to the Global Initiative for Asthma (GINA), prevalence of asthma in Pakistan is 4-5%.

In the study of Ana Cristina et al there were 57% males and 43% females. A total of 46 275 households were screened in the 11 countries in the Asthma Insights and Reality in Latin America (AIRLA) survey, which included 808 children 21% had asthma with mean age of 8 years. Patient Outcomes Management Survey (POMS), included 118 children, 58 males and 42% females, Age (mean, range, SD) 10.6 (7–15, ± 2.4). In our study we found that there were 60.4% males and 39.6% females. The mean ± standard deviation (SD) age of our study population was 8.7±2.4 years/ months.

Several studies have reported an association between childhood asthma and parental asthma. In another study from Hyderabad by Sheikh *et al.* 50% asthmatic children had positive family history. As compared to these 32.3% of our study population had the family history of asthma.

Sheikh et al. also found that 56% of children had infrequent episodic asthma, 36% had frequent episodic asthma and 8% had persistent asthma. 75% children with persistent asthma.[26]

In the study of Ana Cristina et al[25] 64% had PEF >80% of predicted and 36% had PEF 79-60% of predicted. 77% of patients had persistent mild asthma and 23% persistent moderate/severe asthma.

In AIRLA survey[23] daytime coughing, wheezing, shortness of breath or chest tightness were reported by 57% of children at least once a week, and 47% of children had been awakened by their asthma symptoms at least once a week. Based on the GINA symptom severity index, 21% of the patients had had severe persistent symptoms.

In our study we found that 56.3% experienced symptoms more than once in a week but less than once a day, 29.2% experienced symptoms less than once in a week, but 13% had symptoms daily and 1.6% of patients experienced symptoms continuously. 56.3% of patients had nocturnal symptoms more than twice a month, followed by 30.2% had nocturnal symptoms less than twice a month, but 12% had nocturnal symptoms more than once in a week and 1.6% of patients had frequent night symptoms.

According to the analysis of peak expiratory flow 32.3% had ?80% of predicted, 52.6% had ?80%, 13% had ?60%?80% and 2.1% had ?60% of predicted.

30.7% had mild intermittent asthma, 53.1% had mild persistent, 14.1% had moderate persistent and 2.1% had severe persistent asthma.

The disease represents a significant burden not only in terms of reduced quality of life, but also in terms of healthcare costs. Furthermore, many patients are not capable of recognizing their own clinical deterioration.[23,24] This reduced perception of their worsening state correlates with more severe asthma crises and increased risk of death.[17,21] In Brazil, for example, it is estimated that in 1996 around 70% of deaths from asthma were of patients who did not recognize clinical decline and/or received inadequate treatment.[25]

CONCLUSIONS

The study revealed that asthma severity as per Global Initiative for Asthma (GINA) guidelines in pediatrics population of age 05-14 years in out door patients of our setup in descending frequency as mild persistent, mild intermittent, moderate persistent and severe persistent respectively. This study also shows that Global Initiative for Asthma (GINA) guidelines can easily be applied in pediatrics population for the assessment of asthma severity so that treatment of problem can be timely taken .This will not only make the patients symptoms free but also will improve the quality of life.

RECOMMENDATION:

It is recommended that every patient presented with asthma should be classified according to (GINA) guidelines for management purpose to reduce the morbidity and mortality of asthma; it is need of time the awareness of (GINA) guideline should be spread to medical personals.

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