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A STUDY ON DIFFERENT PREDICTORS FOR ACUTE ASTHMA ATTACK IN ASTHMATIC PATIENTS

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Abstract:

Introduction: *Asthma is a serious global health problem. The prevalence of asthma is increasing in most countries, especially among children. The burden of asthma is experienced not only in terms of healthcare costs but also as lost productivity.* ***Objectives of the study:*** *The main objective of the study is to analyze different predictors for acute asthma attack in asthmatic patients.* ***Material and methods:*** *This retrospective study was conducted at hospitals of Mandi Bahauddin during Jan 2018 to May 2018. In this study we studied one hundred patients who were referred with exacerbation of asthma or other acute asthmatic symptoms and went under treatment in hospitals. Pulse Oximetry was done and documented at arrival and 30, 60, 120 minutes after arrival. PImax and PEmax were measured and documented at arrival and 60, 120 minutes after arrival.* ***Results:*** *Detailed frequencies of exposures in patients both with and without hospital admissions due to asthma exacerbations in the year following admission to the study are shown in Table 1. The majority of these associations are self-explanatory; however, some deserve special attention. Ratio of FEV1/FVC, PEF, PImax, PEmax and FVC with cut-off point 50.4, 2.05, 62.5, 63.5 and 2.7 with 70% sensitivity were capable to forecast the need for hospitalization.* ***Conclusion:*** *It is concluded that FEV1 and PEF that have role in admission criteria, FEV1/FVC at arrival to ED and PEmax after an hour after treatment can also be used to forecast the need for admission.*

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INTRODUCTION:

Asthma is a serious global health problem. The prevalence of asthma is increasing in most countries, especially among children. The burden of asthma is experienced not only in terms of healthcare costs but also as lost productivity. Public health officials require information about the costs of asthma care and education on methods to develop asthma care services and programs responsive to the particular needs and circumstances within their countries. Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning [1].

The economic burden of this disease is great in terms of both direct medical and indirect costs for families with affected members and for healthcare systems. It has been calculated that emergency department (ED) visits and hospital admissions account for almost three quarters of the direct costs of asthma. Despite significant advances in the treatment of asthma, particularly over the past 20 years, this disease is a leading cause of hospital admissions among children in various parts of the world. Although these high levels of burden due to the disease constitute a significant problem in high income countries, they are an even greater health problem in low- and middle-income countries (LMIC) where health resources are always scarce [2].

The priority of the clinical examination is to confirm the diagnosis of asthma quickly and to assess its severity. The general appearance of the patient, including difficulty in talking, respiratory rate and heart rate form the basis of the clinical assessment of severity. Increasing pulse rate has a close correlation with worsening asthma severity [3], and it is incorrect to assume that the tachycardia is due to β-agonist treatment. Studies of the response to high-dose β-agonist treatment in severe asthma have shown that the heart rate falls in association with the bronchodilator response [4].

While it is generally well recognized that some patients may have a poor perception of the severity of their asthma, it is less well appreciated that such patients may also appear deceptively well, despite the presence of severe airflow obstruction [5]. These factors contribute both to delay in seeking medical help by the patient and a tendency for the doctor not to appreciate the severity when the patient does present [6]. This underlies the importance of lung function measurements in severe asthma, as well as eliciting other clinical signs such as the difficulty a patient may have in talking, blood pressure paradox, accessory muscle use and tracheal tug. In acute severe asthma, the marked hyperinflation and associated greater inspiratory muscle effort is responsible for the patient's perception that the difficulty in breathing is predominantly inspiratory rather than expiratory [7].

Objectives of the study

The main objective of the study is to analyze different predictors for acute asthma attack in asthmatic patients.

MATERIAL AND METHODS:

This retrospective study was conducted at hospitals of Mandi Bahauddin during Jan 2018 to May 2018. In this study we studied one hundred patients who were referred with exacerbation of asthma or other acute asthmatic symptoms and went under treatment in hospitals. Pulse Oximetry was done and documented at arrival and 30, 60, 120 minutes after arrival. PImax and PEmax were measured and documented at arrival and 60, 120 minutes after arrival. Primary treatment was performed in Emergency Department (ED) and the findings of discharged patients were compared with those who were admitted. We collected all the physical characteristics of patients.

Inclusion criteria

1. Patients with history of Asthma

Exclusion criteria

1. Other Pulmonary heart diseases like chronic obstructive pulmonary disease (COPD)
2. Congestive Heart Failure

Analysis

Student's t-test was performed to evaluate the differences in roughness between groups. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

RESULTS:

Detailed frequencies of exposures in patients both with and without hospital admissions due to asthma exacerbations in the year following admission to the study are shown in Table 1. The majority of these associations are self-explanatory; however, some deserve special attention. Ratio of FEV1/FVC, PEF, PImax, PEmax and FVC with cut-off point 50.4,

2.05, 62.5, 63.5 and 2.7 with 70% sensitivity were capable to forecast the need for hospitalization.

Table 01: Detailed analysis of patients

Parameters	Admitted	Discharged	P Value
FEV1	54/0 ± 19/1	79/0 ± 41/2	<001/0
FEV1%	19/13 ± 21/38	89/29 ± 22/88	<001/0
FVC	44/1 ± 76/2	39/1 ± 70/3	<002/0
FVC%	66/30 ± 06/74	20/61 ± 95/119	<001/0
FEV1/FVC	58/13 ± 39/46	35/13 ± 17/67	<001/0
FEV1/FVC%	09/17 ± 95/57	87/15 ± 65/83	<001/0
PEF	27/1 ± 02/2	79/1 ± 90/4	<001/0
PEF %	36/11 ± 30/26	01/28 ± 54/72	<001/0
FEF7525	08/0 ± 13/0	12/0 ± 25/0	42/0
FEF7525%	91/0 ± 30/2	41/3 ± 43/7	14/0
Pimax	30/20 ± 54/65	38/19 ± 02/87	<001/0
Pemax	30/20 ± 54/65	89/17 ± 60/93	<001/0

DISCUSSION:

Treatment of acute asthma in emergency department had been assayed in many researches[7]. Referred patients are judged for admission on the basis of response to treatment. It has been always a problem for physicians to hospitalize, discharge or continue the treatment in ED. Rapid response to treatment in ED is the best factor for admission evaluation considering the severity of symptoms. PEF change more than 50 L/Min of basic amount and more 40% of estimated amount show good prognosis. In studies by Boychuk, Martin, Weber and coworkers they showed that 15%, 10.5% and 20% of patients referring with asthma attack symptoms were hospitalized, respectively [8].

The present findings could have important consequences for predicting hospital admissions for asthma exacerbations in asthmatic Latino children, due to the fact that to our knowledge this is the first study done among asthmatic Latino children searching for prospective predictors of asthma hospitalization without any intervention [9]. Moreover, since the only independent predictor of asthma hospitalizations found in this study is a potentially modifiable risk factor, our results permit hypothesizing that interventions aimed at decreasing maternal smoking could decrease the probability of hospital admission for asthma exacerbations in asthmatic patients [10].

CONCLUSION:

It is concluded that FEV1 and PEF that have role in admission criteria, FEV1/FVC at arrival to ED and PEmax after an hour after treatment can also be used to forecast the need for admission.

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