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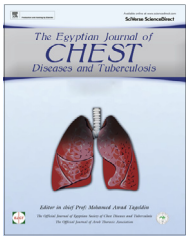

ORIGINAL ARTICLE

Assessment of the effect of implementation of global initiatives for asthma (GINA) guidelines in the outcome of asthma exacerbation in the emergency department

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KEYWORDS

Asthma;
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Treatment;
Global initiative for asthma (GINA) guidelines;
Emergency department (ED);
Asthma exacerbation

Abstract *Introduction:* Asthma is a continuous significant health problem. Strategies for treating exacerbations are best adapted and implemented at a local level. Severe exacerbations are potentially life threatening, and their treatment requires close supervision. The severity of the exacerbation determines the treatment administered. Indices of severity, particularly peak expiratory flow (PEF), pulse rate, respiratory rate, and pulse oximetry should be monitored during treatment.

Aim of the work: The aim of this work was to assess the effect of the implementation of the Global Initiative for Asthma (GINA) guidelines in the prognosis and the outcome of asthma exacerbation in the emergency department.

Subjects and methods: The study was conducted on one hundred asthmatic patients. All patients were informed about the study and gave their consents. Patients were subjected to full history taking and clinical evaluation. Investigations were done in the form of peak flow rate (PFR) measurement, pulse oximetry assessment, ABG analysis (for only 17 patients), chest X-ray (it is not routinely recommended) and complete blood count (if needed). Then patients were classified according to their attacks. All patients were managed according to GINA guidelines.

Results: Older patients were significantly suffering from severe to life threatening attacks than younger patients. We found that 12% of patients had occupational related asthma in relation to 88% of patients had non-occupational related asthma. There were no statistical significant differences between classification of severity of current attack and previous emergency department (ED) visits/year. There were no statistical significant differences between the studied groups

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regarding temperature. Systolic and diastolic blood pressure had statistically significant lower values in patients with severe to life threatening attacks than those with mild to moderate attacks. Severe to life threatening group had respiratory rate higher than mild to moderate group. Mild to moderate group had PEF and SaO_2% higher than severe to life threatening group. PEF was statistically higher post treatment than pre treatment. Three patients of 17 had $PaCo_2$ >45 mmHg with hypoxemia and respiratory acidosis and they admitted to the intensive care unit (ICU). All patients in ED were assisted to determine the severity of asthma concomitant with administration of initial treatment (plan A), which is oxygen to achieve O_2 saturation ⩾92%, inhaled B2 adrenergic bronchodilator and an oral or intravenous dose of corticosteroids. Five patients met a good response so they enter in (plan C1). Seventy-five patients met with the criteria of moderate episode they go to plan B1, 68 patients of them (about 90%) had a good response within 2 h so go to plan C1 and the rest 7 patients (10%) had an incomplete response go to plan C2. Twenty patients met with criteria of severe episode, 17 of them (85%) with incomplete response move to plan C2, and the rest 3 patients (15%) had a poor response and moved to plan C3, no improvement noticed so they were admitted to the ICU. Hospitalization was done to 11 patients who met a poor response (plan C2), 86 patients were discharged from the ED (73 patients from plan C1 and 13 patients from plan C2). Severe to life threatening group stayed in ED longer than mild to moderate group.

Conclusions and recommendations: All patients presenting in the emergency department with asthma exacerbations should be evaluated and triaged immediately and must be treated according to their severity of classification using GINA guidelines. Measurements of airflow obstruction, using peak expiratory flow, can help to guide therapy for acute asthma. Continuous monitoring of oxyhaemoglobin saturation by pulse oximetry should be undertaken for all patients with acute exacerbation of asthma. We must; educate patients in ED about the nature of asthma and its therapy, educate patients how to use inhalers, encourage patients to use spirometer at home and discharge each patient with ED-asthma discharge plan.

Introduction

Asthma is a common chronic disorder of the airways that involves a complex interaction of airflow obstruction, bronchial hyper responsiveness and underlying inflammation. The interaction of these features of asthma determines the clinical manifestations and severity of asthma and response to treatment. This interaction can be highly variable among patients and within patients over time [1].

Asthma is a continuous significant health problem. The cost of asthma care and the burden on individuals and society are growing [2]. Factors that influence the risk of asthma can be divided into those that cause the development of asthma and those that trigger asthma symptoms; some do both. The former include host factors (which are primarily genetic) and the latter are usually environmental factors [3]. Much of what is known about asthma risk factors comes from studies of young children. Risk factors for the development of asthma in adult, particularly de novo in adults who did not have asthma in childhood, are less well defined [4–5].

The diagnosis of asthma is based on the recognition of characteristics pattern of symptoms and signs and the absence of an alternative explanation for them. The key is to take a careful clinical history. If asthma does appear likely, the history should also explore possible causes, particularly occupational [6]. Spirometry, is the recommended method of measuring airflow limitation and reversibility to establish a diagnosis of asthma. Peak expiratory flow (PEF), measurements using a peak flow meter is an important aid in both diagnosis and monitoring of asthma. The differential diagnosis in patients with suspected asthma differs among different age groups: infants, children, young adults, and the elderly [7].

Exacerbations of asthma (asthma attacks or acute asthma) are episodes of progressive increase in shortness of breath, cough, wheezing, or chest tightness, or some combination of these symptoms. Exacerbations usually have a progressive onset but a subset of patients present more acutely [8].

Most patients suffering from acute asthma request therapy with a constellation of complaints consisting of dyspnea, cough, and wheezing. The first two can also occur as isolated entities. No signs or symptoms are uniformly present. The physical signs that are encountered are tachypnea, tachycardia, wheezes, hyperinflation, accessory muscle use, pulsus paradoxus, diaphoresis and cyanosis [9].

Strategies for treating exacerbations are best adapted and implemented at a local level. Severe exacerbations are potentially life threatening and their treatment requires close supervision. Patients with severe exacerbations should be encouraged to see their physician promptly or, depending on the organization of local health service, to proceed to the nearest clinic or hospital that provides emergency access for patients with acute asthma. Close objective monitoring of the response to therapy is essential by measuring PEF. The severity of the exacerbation determines the treatment administered. Indices of severity, particularly PEF, pulse rate, respiratory rate, and pulse oximetry should be monitored during treatment [7]. Partial pressure of carbon dioxide ($PaCO_2$) may worsen in some patients on 65 percent oxygen, especially those with more severe airflow obstruction. Oxygen therapy should be titrated against pulse oximetry to maintain satisfactory oxygen saturation [10]. It is very essential to assess the likelihood of asthma-related hospitalizations or emergency department (ED) visits in adults with severe or difficult to treat asthma [11].