

Regular Use or on Demand of Inhaled Corticosteroids for the Management of Bronchial Asthma among Libyan Patients

Walid Tarsin^{1*}, Hanin Abdulgader², Esra Eshmandi³, Ishraq Elshamli⁴

^{1,2,3} Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Tripoli University, Tripoli, Libya

⁴ Respiratory department, Tripoli Medical Center, Tripoli, Libya.

***Corresponding Author:** Walid Tarsin, Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Tripoli University, Tripoli, Libya

Abstract: A stepwise approach to the use of inhaled corticosteroids (ICS) for the management of bronchial asthma is recommended by all medical guidelines. However, often, ICS are used intermittently by patients, and/or recommended by physicians to be used during the onset of exacerbations. Hence, the present study was aimed to evaluate whether Libyan asthmatic patients are using ICS regularly or on demand, and their outcomes. The present study was conducted in Tripoli city, along a period of ten months, from May 2013 to February 2014. Three hundred patients of either sex recruited from different areas of Tripoli city; diagnosed with asthma and received treatment at Tripoli Medical Center and Abouseta Hospital were included in this study. The mean age of patients (\pm SD) was 51 years (\pm 29.1). Our results showed that 156 patients (52%) used ICS regularly (Male: 35% and female: 65%), whereas, 48% (144 patients) used ICS during attack (Male: 35% and female: 65%). Of the total participants, 61% of patients stated that had asthmatic exacerbation symptoms within one month after discontinued ICS use (Male: 32% and female: 68%). Furthermore, 39% of patients reported experienced first exacerbation of symptom after 30 days of ceased ICS use (Male: 38% and female: 62%). Exposure to cold, contact with dust and inhaler misuse were the most common reported cause of exacerbations, respectively by 71% (212 patients), 12% (37 patients) and 5% (15 patients). Our findings demonstrate that nearly half of the Libyan asthmatic patients are using ICS on demand and few of them had experienced asthma exacerbations after ICS pause use. Hence, in order to reduce the long-term exposure to ICS and patients' cost, we suggest, in contrast to international standards of asthma care, use of ICS just during attacks as a new potential treatment option.

Keywords: Asthma, Inhaled corticosteroids, Oral steroids, Hospital admission

1. INTRODUCTION

Asthma is two stage process that can be defined as a chronic inflammatory disease and bronchial hyper-responsiveness that leads to reversible airways obstruction, either spontaneously or following medication [1]. Although everyone's airway has the ability to obstruct in response to allergens, the asthmatic's airways are very sensitive. As the airways become obstructed, more effort is required to force the air through and therefore breathing is very difficult together with wheezing and coughing. Asthma cannot be cured, but it can be managed and with proper treatment, people with asthma can get normal and active lives.

Asthma has become one of the commonest chronic diseases in the industrialized countries. Its prevalence is increasing and over the past 35 years a dramatic increase in hospital admission rates and general practitioner consultations, for both adults and children with asthma, has occurred [2]. It is estimated to affect 5-10% of the world's population [3]. On the international scale, the prevalence of asthma is 1-18% of the population in different countries according to the Global Initiative for the Asthma Management report [1]. Air pollution, allergen exposure, tobacco smoke and diet have all been implicated with this increase but evidence in support of these factors is conflicting.

Asthma is commonly classified as extrinsic or intrinsic [4]. Extrinsic asthma is triggered by identifiable external allergens. Patients with extrinsic asthma are atopic, readily develop immunoglobulin E (IgE) antibody against trigger materials present in the environment [5]. This form of asthma is also known as allergic, episodic or early-onset asthma, and is commonly seen in children. It is believed that the

allergen induces mast cell degranulation by combining with the IgE antibody present on the surface of the mast cell. Degranulation then liberates a variety of substances, including histamine, and newly formed metabolites of arachidonic acid such as prostaglandins and leukotrienes. In addition, eosinophil infiltration is a characteristic feature of asthmatic airways. These cells do release variety of mediators including leukotriene C₄, platelet-activating factor and some basic proteins such as major basic protein and Eosinophil cationic protein, which are toxic to airway epithelium [6]. Intrinsic asthma, which involves late-onset asthma, is characterized by unknown or poorly defined agents; circumstances or conditions responsible for attacks. Patients are not atopic and the condition is usually found in adulthood [7].

During exacerbations of asthma, the inflammatory response increases the micro vascular permeability and thus cellular infiltration, fibro genesis and smooth muscle airway wall changes [4,8]. This leads to a spasm and more obstruction with extra mucus secretion creating a constriction or complete blockage of the airways associated with a decline in the peak expiratory flow rate and forced expiratory volume in one second.

Since the initial process of asthma is broncho constriction, mast cell activation and an inflammation process; treatment is targeted to reduce these events. A stepwise approach to the pharmacological treatment is recommended by GINA guidelines [9,10] in attempt to achieve optimal asthma control. These guidelines contain a step-up process until disease control is achieved and maintained for a sufficient period of time (usually at least 3 months) then a gradual reduction of the maintenance therapy is recommended to identify the minimum therapy required to maintain control.

The goal of asthma management has been defined as no symptoms, no limitations of daily activities, no need for reliever treatment, normal or near-normal lung function results and no exacerbations [9]. The stepwise approach to treatment is based on the use of inhaled short-acting bronchodilators (Relievers) and corticosteroids (Preventers) in the mild stages of the disease, supplemented by the use of long-acting beta agonist (Protectors), antimuscarinics, theophylline's and leukotriene antagonists. Oral corticosteroids are used for more severe cases and during acute exacerbation as a short course. At the beginning of this century, the concurrent use of an inhaled long acting beta agonist has been advocated [11]. Patients should receive regular clinic review, be encouraged to participate in the monitoring of their condition by means of PEFr recordings and be able to tailor their therapy to their level of symptoms. Inhaled corticosteroids (ICS) are the most effective medication currently available to treat asthma. This route limits any clinically relevant unwanted effects. They improve the physiological abnormality of variable airflow obstruction and airway hyper-responsiveness that characterizes asthma as well as reducing the decline in lung function over time that occurs in asthmatic patients. Therefore, ICS should be considered as the first line therapy for patients with regular daily asthma symptoms, and they should be started early after a diagnosis is made [12].

Daily ICS are the recommended mainstay of treatment in children and adults with persistent asthma. However, often worldwide, ICS are used intermittently by patients or recommended by physicians to be used only at the onset of exacerbations [13]. In Libya, no such information, regarding this point, has been reported previously. Therefore, the present study was aimed to investigate whether the Libyan asthmatic patients are using the ICS regularly or during episode attacks, and their outcomes.

2. PATIENTS AND METHODS

Asthmatic patient visited the emergency room (ER) or their physician for follow up in the main two hospitals in Tripoli for respiratory distress; Tripoli Medical Center and Abouseita Hospital, were recruited to participate in this study. Before starting the study, ethical approval was obtained from both hospital medical boards. As well, A written informed consent was obtained from all patients.

Inclusion criteria were stable adult asthmatic patients aged more than 18 years old and using ICS for the management of his/her asthma. While, the exclusion criteria included those who are cigarette smoking, patients having chronic obstructive pulmonary disease, respiratory tract infection and patients on oral steroids during the study period. The study form was prepared by the investigator, and it contains patient's demographic data, regular or on demand use of ICS, previous visit to ER or

hospital admission, whether the patient gets asthma attack immediately after stopping ICS or later on, physician follow up and if the patients preferred inhaled or oral medications

Patients were face to face interviewed by the investigator either at the outpatients' clinic or at the emergency department after the patient get stable and all information included in the study form were collected and statistically analysed

3. RESULTS

Three hundred patients were included in the study; their mean age (\pm SD) was 51 years (\pm 29.1; rang, 18-86years).One hundred and four patients (35%) were male, with mean age (\pm SD) 49 years (\pm 14.9)and 196 female patients (65%)with a mean age (\pm SD) 52 years (\pm 34.3).All patients were advised by their physicians to use the usual asthma medication; ICS, long acting beta agonist (regularly) and short acting beta agonist. Our data showed that 156 patients (52%) used the ICS regularly (male: 35%, female: 65%, fig. 1). On the other hand, 144 patients (48%) used ICS during attacks (male: 35%, female, 65%).Most of the patients (90.3%) had history of taking oral steroids and stated that oral steroids were the choice when their asthma attacks get worst. In addition, one hundred and sixty-four patients (55%) experienced hospital admission. Moreover, the majority of patients (97%) stated that had a previous ER visit due to acute asthma exacerbation and received, in addition, to nebulized bronchodilators a single hydrocortisone injection (iv).

The present study demonstrated that exposure to cold, dust and inhalers misuse were the most causes of asthma exacerbation symptoms among patients after discontinuing ICS use. Of total subjects, 71% of patients reported that had exacerbation due to exposure to cold, 12% stated that exacerbation was due to dust contactand 5% of patients experiences asthma exacerbation due to inhalers misuse. Figure2shows that 182 patients (61%, male: female, 1:2) did complain asthma exacerbation during one month after ceasedICS use. The rest, 118 patients (39%, male: female, 1:1.6) described that exacerbation of asthma attack was started after 30 days of withdrawing ICS medication due to different reasons.

Regarding the attitude and practice of Libyan asthmatic patients towards ICS use, our data revealed that 178 patients (59%) preferred to use ICS regularly, and 122 patients (41%) favored use of ICS when are necessary (Fig 3).Moreover, it was showed that, overall, 91% of patients found it easy to use inhalers and 77%of patients had regular medical follow up (fig. 4).

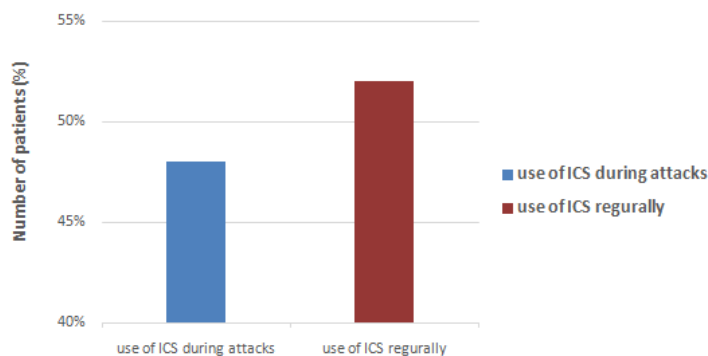


Fig1. Number of patients used inhaled steroids regularly or during attacks only

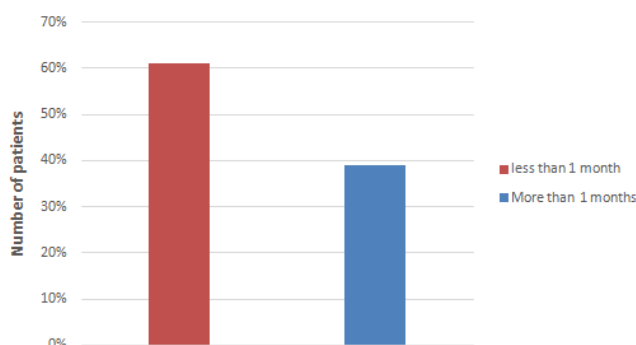


Fig2. Time of asthma exacerbation after stopping ICS use.

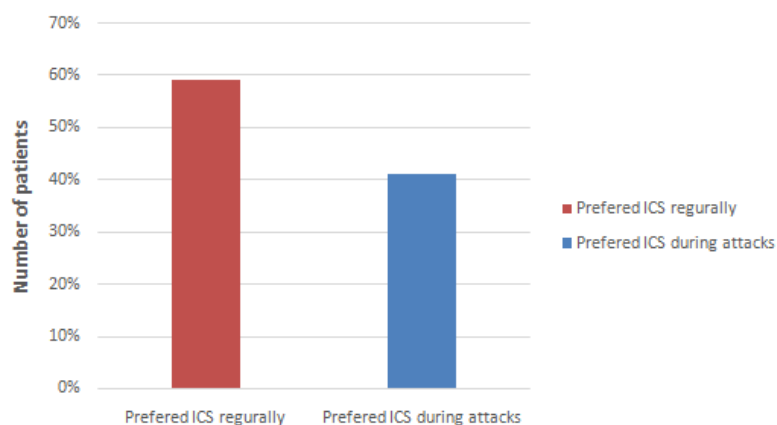


Fig3. Number of patients preferred to use inhaled steroids regularly and SOS

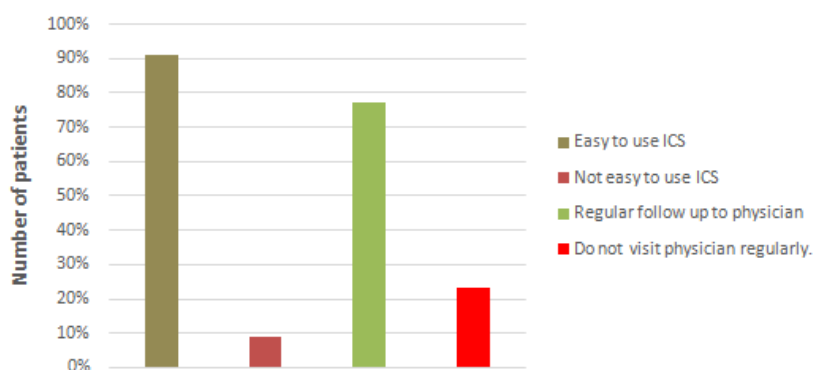


Fig4. Patient use of ICS and their physician follow up.

4. DISCUSSION

Asthma is a disease caused by underlying inflammation in the airways. Asthma exacerbation occur when the airways contracts making it difficult to normal breath. In mild asthmatic patients, ICS are often advised to be used every day to control the underlying inflammation. A stepwise approach to the pharmacological treatment of asthma is recommended by GINA guidelines [9,10] in attempt to achieve optimal control. These guidelines comprise a step-up process until disease control is achieved. Once asthma control is achieved and maintained for a sufficient period of time “usually at least 3 months” a gradual decrease in the maintenance dose is recommended until get the minimum ICS therapy required

Previous studies by Cochrane [14] and Hoskins et al. [15] have showed poor compliance among asthmatic patients, ranging between 20 - 80%, and 16% -50%, respectively. In line, McCowan and his colleagues [16] have reported that almost third of asthmatic patients were not using their prophylactic medication (i.e., ICS) as prescribed. In the present study, although all patients were asked to use the ICS as a routine treatment for the management of asthma, nearly half of the patients did use ICS during asthma attacks only. Our data shows that two third of those patients get back asthma attack on a longer period of time (>30 days), due to different reasons rather than discontinuing ICS use. Hence, these findings demonstrate that uses of ICS regularly are not required by asthmatic patients and instead, it must be used during asthma attacks. Our findings are in agreement with Volovitz et al. studies [17]. It has been shown that 75% of asthmatic children were effectively controlled by the use of as-need basis with ICS technique. At the same time, since the findings that one sixth of patients observed in this study, who did use their ICS regularly, exhibited an acute exacerbation of asthma after stopping their ICS use (>30 days), it also reveals that patients do not need to use ICS regularly. Besides, since two fifth of the patients preferred to use ICS on demand also support our new plan of treatment strategy (on demand) since the possibility of ceasing ICS treatment, by the patients himself fat any time is always expected. Further more, as more than half of the patients participated in this study had a previous hospital admission (regular ICS use: ICS use on demand; 2:1) it seems likely that use of ICS during attacks (i.e. as needed) much better improve the patient’s lifestyle.

5. CONCLUSION

The present study demonstrates that nearly half of the patients did use ICS as needed bases. Hence, this new protocol, exhibit a potential new treatment option that could change the international standards of care, limit the long-term exposure to corticosteroids and enabled flexibility in managing asthma condition and reduce patients' costs.

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