EVALUATION OF PATTERN OF PRESCRIPTION FOR ASTHMA : A MULTICENTER PROSPECTIVE OBSERVATIONAL STUDY FROM PAKISTAN

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ABSTRACT

Asthma is a common allergic reaction and a number of drugs are available. This study was conducted to evaluate the prescribing pattern and usage of anti-asthma medications at different medical setups in Hyderabad. The study was conducted from August 2017 to July 2018. A total of 1000 patients from different medical setups diagnosed with asthma were recruited. A pre-designed, detailed questionnaire was used for their data collection. Their prescriptions were collected to evaluate and compare them with the standard guidelines of GINA. The prescribing pattern of anti-asthma was assessed regarding the type of therapy, route of administration, single or multiple treatments, class of drugs, doses, and frequency. Demographically, more asthmatics were found to be males (i.e 73.5%), 46.5% were adults, 58.3% from urban areas and 51.68% of the sample had outdoor jobs, while 41.5% of illiterate people were found to be asthmatic. A major type of asthma was persistent at 65.3%. A maximum prescription of 85.5% for asthma management was combined therapy. From long-term use, the monotherapy ICS group was reported in a considerable number (44.13%) (i.e. Beclomethasone in 70% and Budesonide in 7%). Prescriptions of multiple routes of administration were comparatively higher (79.5%). The study concluded that male, young, urban, illiterate and people with outdoor jobs were more likely to get asthma. Preventer drugs were prescribed more in combined therapy, in which Fluticasone + Salmeterol were preferred. The oral inhalational route was selected more. The treatment pattern was consistent with standard guidelines.

Key Words: Asthma, Rationality, Prescriptions, Practice, Pattern, Medications

INTRODUCTION

Asthma is an inflammatory disease of respiratory tract, which creates difficulty in breathing and causes wheezing during breathing (1-3). Asthma is considered a severe disorder with prevalence ranging from 1 to 21% in elders and more than 20 % in 6 to 7 years old children worldwide (4). Globally, one in every two fifty deaths has been accredited to asthma (5,6). Asthma is classified as intermittent and persistent asthma, further categorized as mild, moderate and severe persistent asthma. (7-10). Appropriate drug treatment can improve airway obstructions, thus reducing the severity of asthma (11). The rational management of asthma is considered to reduce the risk factors of asthma, i.e. to prevent recurrent exacerbations of asthma, prevent progressive failure of lung function, and provide appropriate pharmacotherapy with minimal adverse effects. As per the Global Initiative for Asthma (GINA) guidelines, different medications are advised to manage asthma. Therapy includes two categories of medicines. One is the long term used medications, also called control medications or preventers. The second category is short-term used medications, quick-relief medications or relievers. These medicines include corticosteroids, prolonged and short-acting beta2 agonists, xanthenes derivatives, leukotriene receptor antagonists, mast cell stabilizers, and immunomodulators. These medicines can be used alone or in combination. Biological agents like Omalizumab, Mepolizumab and Dupilumab are also being used to man-

age severe asthma (2,12). Given the rise in the asthma attacks in cases with sub-optimal treatment asthma management guidelines recommended continuous preventive management as compared to the care done in crisis situation to relieve symptoms (10,13). Despite the availability of standard guidelines and the efficacious medicines through which asthma can be controlled optimally, the survey reports show less asthma control in many countries (14).

Prescription studies are done to evaluate the medication therapy designed by healthcare professionals for any patient suffering from any specific disease. These drug utilization studies have been done in the United States of America at institutions and local healthcare systems. Early studies were done to analyze the quality of prescribing patterns, especially in the case of antibiotics and Europe. These studies were quantitative in which, as per time and geography using, patterns of specific drug groups were compared and described. These studies showed significant variations in the utilization of many pharmaceutical drugs like anti-hypertensive, NSAIDs, Antidiabetics, antibiotics, psychotropic and lipid-lowering drugs (15).

However, there is limited literature available to study pattern of the prescriptions and how they meet the guidelines. Therefore, this study was designed to evaluate the pattern of prescription of anti-asthmatic medication and the medication usage. This study will also evaluate and compare the practice pattern of healthcare professionals of efficacious medications with the available standard guidelines.

METHODOLOGY

This was a prospective observational study conducted over 12 months, from August 2017 to July 2018 in different medical setups at Hyderabad, Sindh, Pakistan including 1000 patients. After getting consent from patients and their caretakers, the questionnaire was filled regarding their demographics, including age, gender, education, locality, occupation, and type of asthma. Non probability convenient sampling technique was adopted for this study where those who were diagnosed with asthma were invited to be part of the study. The patients of age over five years diagnosed with any asthma-like mild, moderate or severe asthma were selected and those of age less than five years and suffering from other chest problems like Chronic Obstructive Pulmonary Disease, Tuberculosis Bacillus, Pneumonia and Lung cancer were excluded from the study. Both indoor patients and outdoor patients were included. This study also included the patients who were on their routine follow up and even if they were hospitalized. The drug therapy was analyzed regarding the practice pattern like monotherapy or combined therapy, type of therapy, class of drugs, selection of molecules of each class and route of administration.

RESULTS

A total of 1000 patients were included in this study. There were 73.5 % males and 26.5% female patients. The younger population between 12 to 39 years were predominant (46.5%), followed by the children between 6 to11 years of age (33.7%) and 19.8% were older population (40+ years age). Urban population were represented more i.e. 58.3%. A 41.5% of asthmatic patients were illiterate followed by those having primary and basic education (34.5%) and university-level education (24%). Considerable number were 49.7% jobless, and those in indoor or outdoor job patients were 48.31% and 51.68%, respectively.

Pattern of prescriptions in asthma patients

A total of 25% of prescriptions came from public sector health care facility while 75% were from charity hospitals or private sector medical setups. More than 65.3% of patients were found with persistent type asthma compared to intermittent asthma found in 34.7% of patients (Figure 1). Prescriptions of monotherapy were less than 14.5% as compared to combined therapy at 85.5%. Among long-term use, mono therapy's maximum ratio of prescriptions was inhaled corticosteroids at 44.13% and a minimum usage was observed of oral corticosteroids at 2.7%. Other classes of drugs like long acting beta agonists (LABAs) 22.75%, Leukoterine inhibitors (LTIs) 17.24% and xanthine derivatives at 4.13% were prescribed. Amongst the Inhaled corticosteroids (ICS) group, contained Beclomethasone, and budesonide. In the combined therapy, highest number of prescriptions were the combination of ICS+LABA's at 35.20%, and the lowest number was a combination of ICS+LABA's+LTI's at 2.10%. A summary of the drug prescription pattern is presented in Table 1. Subsequently, 79.5% of prescriptions contained multiple

routes and 20.5% single routes. From multiple routes, the highest number (n=590) prescriptions were found with oral inhalation route of administration (Figure 2).

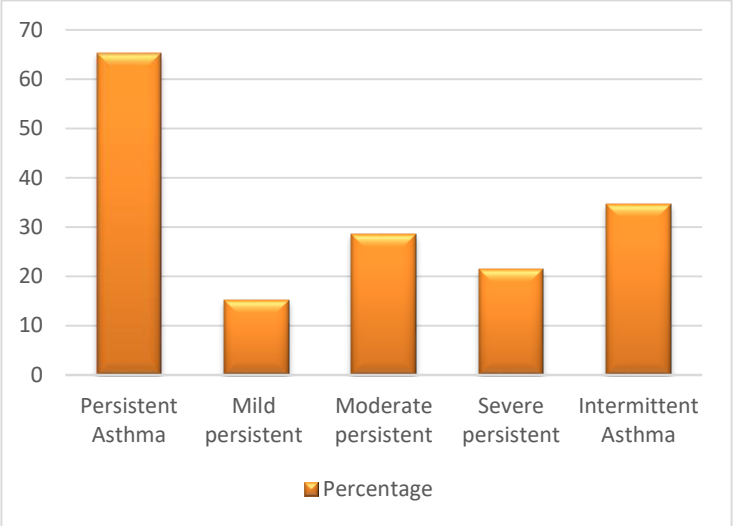

Figure 1. A summary of the types of Asthma found in Patients recruited in this study

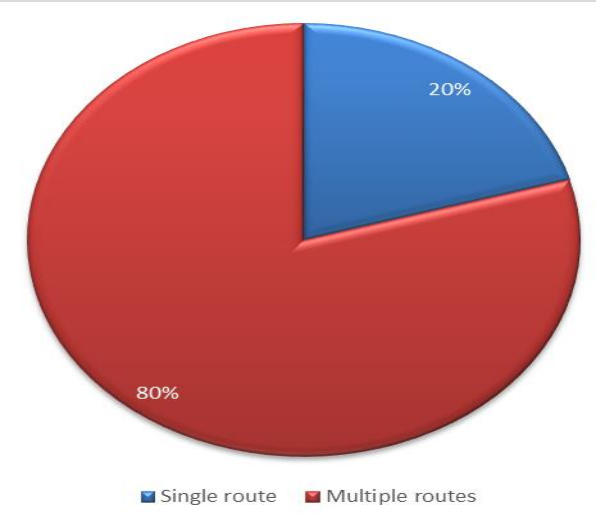

Figure 2. Pattern of route of administration of asthma patients

Table-1. A summary of the pattern of Different Classes of drugs prescribed for Asthma

Type Of Therapy		Monotherapy (Total 14.5%)		Combined Therapy (Total 85.5%)	
	Maximum Prescribed	Inhaled Corticosteroids (44.13%)		ICS+LABA's (35.20%)	
		Beclomethasone 70.31%	Budesonide 7.81%	Fluticasone + Salmeterol 56.47 %	Budesonide + Formoterol 18.27 %
	Minimum Prescribed	Oral corticosteroids (2.7%)		ICS+SABA's+LTI's (2.10%)	
		Prednisone 75% (Maximum)		Fluticasone+Albuterol+Montelukast 72.22%	
		Prednisolone 25% (Minimum)		Budesonide+Albuterol+Montelukast 5.55%	

ICS= Inhaled Corticosteroids, LABA's=Long Acting Beta Agonists, LTI's= Leukotriene Inhibitors

DISCUSSION

Prescription studies are done for many purposes, such as the evaluation of prescribing pattern or trend or attitude of physicians, drug utilization, knowing the implementation of recommended guidelines, evaluating the rationality of prescriptions by comparing with the standard international policies like Global Initiative for Asthma (GINA) for anti-asthma medications (1, 4). A few studies, including a retrospective study on drug utilization in asthmatic patients in India conducted by Basavaraju, focused on the type of anti-asthma medications and the routes of administration and also report the frequent use of combined therapy in the management of asthma (16). Other related studies have also been reported from India and Turkey which presented the prescribing pattern and drug utilization in asthmatic patients (17, 18). The study by Shalini suggested improvement in current practice trends for rational and better drug utilization (18). On the other hand, Haluk's study showed that the prescription containing the steroids and short acting beta agonists (SABAs) group and an anticholinergic drugs were utilized as per guidelines (17). The selection of therapy was based on the type of asthma which was decided by the occurrence or the frequency of reported symptoms (1,5). Other factors related to patients such as age were also considered before deciding to start the treatment of asthma (11). The GINA guidelines for anti-asthma medications have recommended and classified the treatment plan of asthma into five steps; in each step, a specific class or classes of drugs can be prescribed as single or combined therapy that can be done based on the severity of asthma, frequency of symptoms, patient age and lung function condition (1, 6). From our study, the prescribing pattern of physicians shows that the use ICS class of drugs is preferably prescribed as monotherapy prescription. In guidelines, ICS are also preferred as a single therapy in step two of the treatment plan. Many prescriptions of combined therapy contain the ICS+LABA's which are also recommended in step two of the guidelines. Amongst these ICS+LABAs, the currently approved combination includes Budesonide + Formoterol; the results of our study are consistent with these guidelines. In our research, another variety of ICS+LABAs found was Fluticasone + Salmeterol, it is also mentioned in guidelines (1, 6). Triple therapy is also mentioned in the guidelines, which can be given in steps from three to five. In our study, drug classes prescribed as triple therapy were ICS+ LABA's+ LTI's. In guidelines like in step three, two controllers and one reliever can be given. Theophylline can also be given along with ICS and LTI's combination as stated in the guidelines. This study shows that in the majority of prescriptions, multiple routes of administration were selected for therapy. Both routes in combination were found in 59.2% of drugs for oral and inhalation. The parenteral route was also used in combination with the oral route. The findings of this study show that prescribing patterns or attitudes of prescribers are maximally matching with guidelines of GINA in selecting the type of drug class, types of therapy like monotherapy or polytherapy and also the routes of administration. Findings suggest that this attitude is somewhat the same as that of Turkish and Indian prescribers in treating asthma regarding a few aspects like type of therapy and routes of administration. This is the most critical finding of this study, which shows that GINA guidelines are being used and implemented here, which has a significant role in managing asthma and decreasing its load. But there are few other findings in prescribing patterns compared to related studies such that in this study, the choice of therapy to attack asthma is LABA seen more, and this is one of the appropriate selections of the drug. The study did not include clinical parameters of the clinical progress as response to therapy, the dose of the prescribed drugs and the duration were not included in this study, which is considered as a limitation.

CONCLUSION

The study concludes that more males patients, younger in age and dwelling in urban areas were presented with Asthma. Primary patients had intermittent asthma. Preferably combined therapy was found with most ICS+LABA groups of medications in which Fluticasone + Salmeterol were used more than Budesonide + Formoterol. Multiple routes like oral inhalational were used more frequently to manage asthma. Overall the management pattern followed the guidelines.

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Ethical Consideration: The study was approved by the local Research Ethics Committee
Conflict of Interest: There is no conflict of interest.
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