Short Communication

Drug prescription pattern for bronchial asthma in a tertiary-care hospital in Eastern India

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Abstract

Background: A wide range of medications are now available for the treatment of asthma, and selection of optimal treatment is essential. **Aims and Objective:** To evaluate the drug-prescribing trend of antiasthmatic drug in a tertiary-care hospital. **Materials and Methods:** The prescription data from 130 patients with asthmapatients were studied using a prescription auditing pro forma. Data were recorded from the patients attending the outpatient department of Hi-Tech Medical College and Hospital from February to July 2014. Verbal consent was taken from the patients before filling the pro forma. **Results:** During the study, 130 patients were monitored but only 100 prescriptions were included for data analysis as per the inclusion and exclusion criteria. Demographic analysis of data revealed that there were 66% men and 34% women in the study. The study showed that maximum patients with asthma belonged to 30–40 years age group. The results of this study showed that most of the patients received combination therapy as compared with individual therapy. Majority of the patients received combination therapy of beta 2 agonists and glucocorticoids via inhalational routes; 34% of the prescribed drugs are from the essential drug lists. Average drugs per prescription were 5.16, and 54% of the patients received more than four drugs. About 60% drugs were given by inhalation route, followed by oral route (38%). **Conclusion:** There is need to encourage the physician to use the treatment guidelines while managing patients with asthma. In conclusion, National Asthma Education program would benefit as an initial step to improve asthma knowledge and increase awareness in the medical community on current treatment practice.

KEY WORDS: Drug Prescription Pattern; Bronchial Asthma; Antiasthmatic Drug

Introduction

Asthma, a chronic inflammatory disease of the airways, involves activation of mast cells, infiltration of eosinophils, and T helper 2 (T_H2) lymphocytes. Airway smooth muscle contraction is responsible for many of the symptoms in asthma, which requires bronchodilators for relieving symptoms. Although not clear whether the airway smooth muscle gets intrinsically affected, however, increased contractility of the same seems to contribute to airway hyperresponsiveness, the characteristic feature of asthma. The pathway of chronic inflammation in asthma is not yet clear. Allergen exposure initially drives it; but later, it becomes autonomous, making asthma essentially incurable. The inflammation may involve dendritic cells that regulate T_H2 cells, which in turn activate eosinophilic inflammation and formation of IgE by B lymphocytes. Airway epithelium releases multiple inflammatory mediators and growth factors in order to try repair the damage caused by inflammation. More than 100 inflammatory mediators mediate the inflammation process in asthma. Complex cytokine

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networks, including chemokines and growth factors, play important roles in orchestrating the inflammation process.[1] It, being one of the most common chronic diseases globally, currently affects almost 300 million people worldwide. The prevalence of asthma has increased by affecting 10%–12% of adults and 15% of children in affluent countries over the last 30 years. Increased urbanization in developing countries is leading to increase in the prevalence of asthma, which had been much lower previously.[2]

The characteristic pathophysiological changes in asthma involve chronic airway inflammation, bronchoconstriction, and mucous plugs. The target of asthma treatment is to achieve and maintain clinical control. Clinical studies have shown that asthma can be effectively controlled by intervening to reduce the airway inflammation and treating bronchoconstriction and causing mast cell stabilization. Asthma generally requires long-term treatment, which impacts the cost of the therapy and patient's compliance.[3]

Drug utilization audits ensure qualitatively the correct and safe usage of drugs. These audits can be quantitative or qualitative or combination of both in nature. Quantitative audits quantifies the diverse facts of drug therapy use in a health-care system, whereas qualitative audits involve comparing drug use or practice with predetermined standards or criteria.[4] This study aimed to assess the usage of drugs in the treatment of asthma as a quantitative type of prescription auditing to collect data regarding their extent variability of drug usage in a health-care system.

Aims and Objective

The aim was to evaluate drug utilization pattern in bronchial asthma at a tertiary-care hospital in Eastern India.

Material and Methods

This study was carried out at selected hospitals after obtaining informed consent to collect data from patients attending the physician in outpatient department through a chance random sample method. One hundred patients were monitored using a questionnaire, based on WHO prescription monitoring pro forma from March to August 2014.

The patients who gave their consent were interviewed and information was filled in the pro forma. The age and sex of the patients were recorded. The percentage of all observed data was calculated. Only asthmatic patients were included in the study; asthmatic patients who suffered from other diseases such as hypertension, heart diseases, and other comorbidities such as peptic ulcer, diabetes mellitus, and migraine were excluded from the study. In addition, patients suffering from acute bronchitis, chronic bronchitis, chronic obstructive pulmonary disease, and community-acquired pneumonia were also excluded.

Results

During the study, 130 patients were monitored, but only 100 prescriptions were included for data analysis as per the inclusion and exclusion criteria. The study showed that maximum asthmatic patients belonged to 30–40 years age group (Figure 1). The drugs used primarily in the study population are presented in Table 1. Figure 2 shows demographic analysis of data, which revealed that there were 66% men and 34% women in the study. The results of this study showed that most of the patients received combination therapy when compared with individual therapy (Table 2). Majority of the patients received combination therapy of beta 2 agonist and glucocorticoids via inhalational routes.

Figure 3 showed that 54% of the patients received more than four drugs. Figure 4 showed that 34% of the drugs prescribed were from the essential drug lists. Average drugs per prescription were 5.16. Figure 5 showed that 60% drugs were given by inhalation route, followed by oral route (38%).

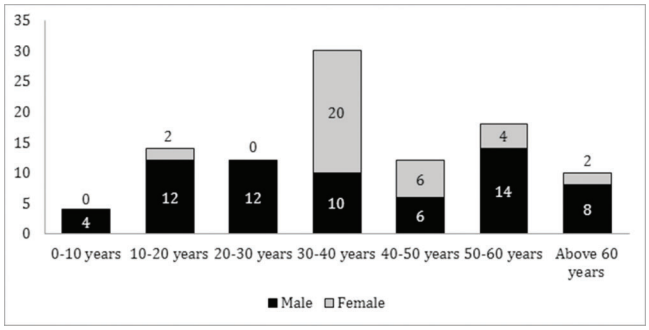

Figure 1: Age and gender distribution of asthmatic patients.

Table 1: Drugs primarily used for asthma therapy

Category	Name of drugs
Corticosteroids	Budesonide, methyl prednisolone
Beta agonists	Salbutamol, salmeterol, bambuterol, formoterol
Methyl xanthine	Doxophylline, etophylline, theophylline
Leukotriene antagonists	Montelukast
Antiistaminics	Levocetirizine
Anticholinergic	Ipratropium bromide, tiotropium bromide

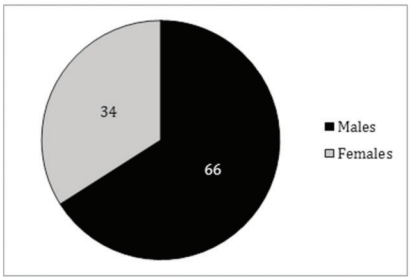

Figure 2: Demographic analysis of data.

Table 2: Distribution of study population according to prescribed individual and combined drugs

Antiasthmatic drugs	No. of patients prescribed individual drugs	No. of patients prescribed combined drugs	Total no. of patients
Methyl xanthine	48	0	48
Beta agonist	4	96	100
Corticosteroids	54	78	132*
Leukotriene antagonist	8	36	44
Antihistaminic	0	32	32
Anticholinergic	2	22	24

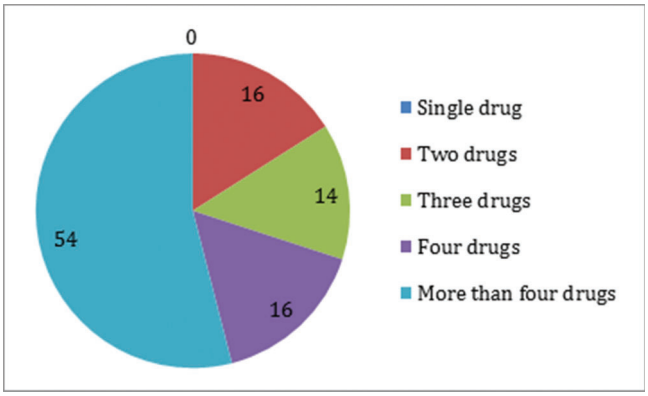

Figure 3: Drug therapy regimen (single/multiple drug regimen).

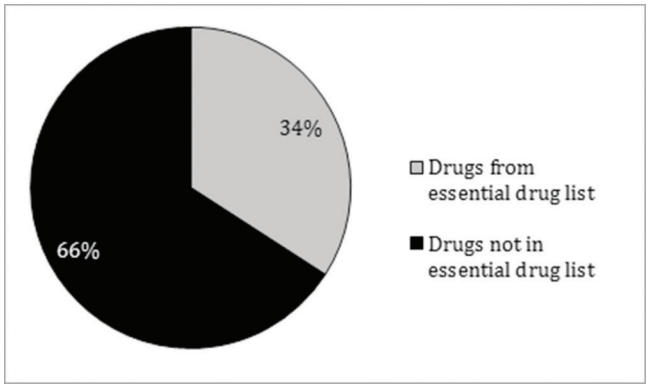

Figure 4: Antiasthmatic drugs prescribed from essential drug lists.

Discussion

The rationality of the prescription can be assessed and evaluated using a prescription-based study, one of the methods available for such purpose. Recommendation of the various international bodies on asthma has enhanced the prescribing practice of the physicians; moreover, clinical standards are also now available.[5–7]

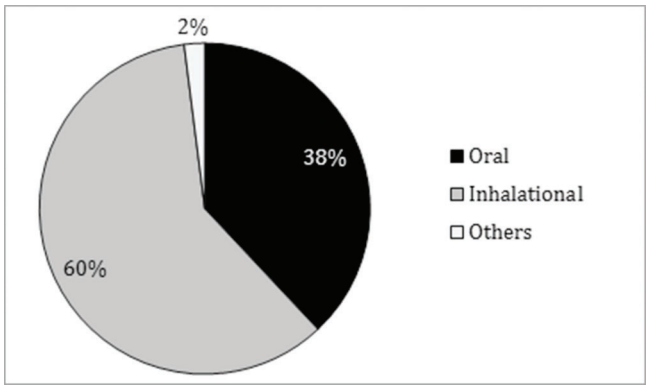

Figure 5: Distribution of drugs according to route of administration.

In this study, the analysis showed that asthma occur more in men than in women, which is confirmed by demographic characteristics showing men (66%) to suffer more from asthma than women (34%). Asthma is mostly diagnosed by history and patient examination by the physician.

Drummond et al.[8] suggested that increase in spirometry access in primary care improves diagnosis and compliance with guidelines.[8] Most of the general practitioners (GPs), mainly from rural areas, considered spirometers to be expensive and lacked confidence in their use. This study suggested a significant divergence between the recommendation of using spirometry and GPs confidence to perform and interpret the tests.

In this study, all patients were on multiple drug therapy, and no patients were on single drug therapy. Because patients with asthma mostly require more than one drug to control the symptoms, hence, combination therapy is often required to treat it. Multidrug therapy in this study reveals the awareness seen among the physicians. Overall, drug utilization showed the combination of beta agonist and corticosteroids (78%) was used in majority of the patients. The symptomatic relief agents seem to be prescribed more than the controlling agents in the treatment of asthma, as shown by this analysis. This finding was not in agreement with those reported by Kumar et al.[9] Our study suggested that only 34% of patients received drugs from essential drug list. More drugs should be prescribed from essential drug list. This indicates that the prescribers were less aware of the drugs listed in the essential drug list. The essential drug list does not contain many important drugs used in asthma such as montelukast, budesonide, salmeterol, formoterol, and levocetirizine.

The inhalational route of drug delivery is used in 60% patients. The inhalational route delivers more drugs locally in the respiratory tract with less side effects. The dose of drug used by inhalational route is also less. This is in accordance to treatment guidelines: inhalational therapy for asthma should be the first choice of treatment.[5–7] This indicates awareness among prescribers and patients education about inhalational therapy. Antibiotics, expectorant, antitussive, and antihistaminics were less prescribed

compared with asthma controllers. This suggests awareness among physicians toward the standard treatment guideline of Global Initiative for Asthma (GINA).

Conclusion

This study suggests that present prescribing practice in asthma therapy in hospitals of Eastern India is not rational. On the basis of these baseline data and the gap found in the present prescribing practice, an intervention is required to improve the current prescribing trend for better and rational utilization of drugs. The physician needs to be encouraged to follow the treatment guidelines in managing patients with asthma. In conclusion, National Asthma Education program would benefit as an initial step to improve asthma knowledge and increase awareness in the medical community on current treatment practice of asthma.

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