Status of Inhalation Therapy in Bronchial Asthma in Adults Above Twelve Years of Age in Armed Forces

MS Barthwal*, RB Deoskar*, KE Rajan**

Abstract

Objective: The aim of this study was to evaluate the status of inhalation therapy in bronchial asthma in terms of frequency of its use, role of general physicians and general practitioners in prescribing inhalation therapy, role of inhaled steroids and B2 agonists, concurrent use of oral drugs, technique of using inhaler devices, use of spacer devices and peak flow monitoring.

Material and Methods: 150 patients (76 males, 74 females) of bronchial asthma over 12 years of age referred to chest clinic of a tertiary care hospital for inadequate control were interviewed on the basis of a questionnaire and screening of prescription and case records wherever available.

Results: 127(84.6%) patients were on inhalation therapy and maximum number of prescriptions was by general physicians (81%). The dosages of inhaled steroids were less than 400 mg in 60 (83.3%) cases and 26 (36%) patients discontinued it after some time. All patients were on beta-2 agonist inhalers and 74 (58.3%) patients were using these on regular basis. The concurrent use of oral short acting B2 agonist and oral steroids was seen in 107 (84%) and 41 (32.2%) patients respectively. Metered dose inhalers (MDIs) were most frequently used inhaler devices in 100 (78.7%) cases followed by rotahalers in 27 (21%) cases. The technique of using MDI and rotahalers was incorrect in 64 (64%) and 7 (25.9%) cases respectively. Spacer devices were used rarely and none of the patients were monitored by peak flow rates.

Conclusions: Although inhalation therapy was being prescribed in large number of patients, more so by general physicians, yet the therapy was not being effective considering the fact that the referral to chest clinic in all the cases was for uncontrolled asthma. The main reasons for ineffective inhalation therapy were, underuse of inhaled steroids, overuse of B2 agonists and incorrect use of inhaler devices. There is an urgent need to educate general physicians especially in regards to usefulness of inhaled steroids, as on demand use of B2 agonists, demonstration of correct inhalation technique to patients, use of spaces devices and peak flow monitoring.©

INTRODUCTION

The cornerstones of asthma management are drug therapy, in the form of inhaled B2 agonists as relievers, inhaled corticosteroids in variable doses as preventers and patient education, as has been recommended by various guidelines. Since airway inflammation plays a central role in the pathogenesis of asthma, the most effective long-term control medications for asthma are those that reduce inflammation. Inhaled steroids are the most potent anti-inflammatory medications currently available. General physicians, who still have reservations about prescribing inhaled steroids, initially manage most patients with asthma.

The reasons for these reservations include simple lack of information about the role of inhaled steroids in asthma and “corticosteroid phobia”. Since inhaled B2 agonists provide quick relief the asthmatic patients tend to use it on a regular basis leading to its overuse and this coupled with underuse of inhaled steroids are the main causes of poor control of asthma. Unlike most forms of drug therapy, the success of inhalation therapy depends on the correct use of inhaler devices. The incorrect inhalation technique leading to suboptimal delivery of drug is an important cause of uncontrolled asthma.

There have been very few studies from our country regarding the role of inhalation therapy in bronchial asthma. The present study was undertaken to assess the current status of inhalation therapy in asthma.

MATERIAL AND METHODS

One hundred and fifty patients over 12 years of age referred to chest clinic of a tertiary care hospital for
inadequate control were included in the study. The diagnosis of bronchial asthma was confirmed by history, clinical examination, chest radiograph and spirometry with reversibility test (12% increase in post bronchodilator FEV₁ and 200ml increase in either FEV₁ or VC). The subjects with chronic obstructive pulmonary disease and insignificant reversibility were excluded from the study.

All the subjects were administered a questionnaire which included age, sex, user or nonuser of inhalation therapy, initial prescriber, drugs used, dosages and frequency of administration of β₂ agonists and inhaled steroids, the reasons for discontinuation of inhaled steroids, concurrent oral administration of short acting β₂ agonists and steroids, inhaler device used and its technique of administration, the source of learning the inhalation technique, the use of spacers and peak flow meters. The inhalation technique was checked personally by the authors and defined as correct or incorrect. The information provided by the patients was counterchecked from prescriptions, which was available with most of the subjects.

Results

There were 150 patients (Male -76, Female- 74) with age groups between 12 to 80 yrs (mean- 41.2yrs). 127(84.6%) subjects were using inhalation therapy, which was initially prescribed by general physicians in 103(81%), general practitioners in 19 (15%) and chest physicians in 5 (4.85%) cases. All cases were on inhaled β₂ agonist (salbutamol), out of which 74(58.3%) cases were taking it on regular basis and 53 as on demand basis (Table 1). Inhaled steroids were prescribed in 72 (56.6%) cases, out of which 62 (86.1%) cases were taking it in the low dosage range. After using it for a period varying between 2-4 wks, inhaled steroids were discontinued in 26 (36%) cases. The reasons for the discontinuation were ‘not effective’ in 20 (76.1%) and ‘contains steroid ‘in 6 (23%) cases (Table 2). Concurrent use of oral short acting β₂ agonists and steroids was seen in 107 (84%) and 41 (32.2%) cases respectively. Regarding the use of inhaler devices, metered dose inhalers (MDIs) were used by 100 (78.7%) cases, dry powder inhalers (rotahalers) by 27 (39%) cases, spacers by 11 (8.6%) and nebulisers by 5 (8.6%) cases (Table 3). Technique of using MDIs was incorrect in 64 (64%) cases and rotahalers was being used incorrectly in 7 (25.9%) cases. The source of learning the inhalation technique was from paramedical staff (nurses and pharmacists) in 70 (55%) cases, from doctors in 34 (26.7%) cases and 23 (18%) from package insert instructions (Table 4). Only two patients (1.5%) were using spacers and none of the patients were using peak flow meters.

Discussion

The inhalation therapy was being used by majority of asthmatic patients (86%) in our study and was prescribed most frequently by general physicians (87%) and general practitioners (15%). In a study of asthma management by private general practitioners conducted in 1994 by Bedi, only 43 (n-106, 40.5%) prescribed inhalers and that also on an intermittent basis. This reflects that over a period of time there has been an increased awareness regarding use of inhalation therapy amongst general physicians and general practitioners who, most of the time manage asthma patients, before referring them to specialty clinics. All cases in the present study were on inhaled short acting β₂ agonists (salbutamol) and amongst them a large number of patients were taking it on regular basis. The regular use of short acting β₂ agonists does not benefit patients with any degree of asthma severity as compared with as on demand use. Moreover, the regular use of β₂ agonists may enhance early and late response to allergens leading to decreased control of asthma.

The appropriate use of inhaled steroids in long-term control of bronchial asthma has long been established in all levels of severity except for mild intermittent asthma. All the patients in the present study had uncontrolled moderate to severe asthma on evaluation at chest clinics, requiring inhaled steroids in the medium to high dosage range, 500-800 µg/day for beclomethasone dipropionate (BDP) and equivalent dosages for other inhaled steroids, as per the guidelines recommended. In the present study there were 72 cases (56.6%) on inhaled steroids and out of which 62 cases (86.1%) were taking it in the low dosage range, less than 500µg/day, and 36% of patients discontinued inhaled steroids after using it for periods varying between 2-4 weeks.
most of the patients had improper inhalation technique, 26.7% learnt the technique from doctors. The fact that paramedical staff (nurses and pharmacists) and only rotahalers are as effective as MDIs with spacers in view with MDIs with spacers in children, also observed that al used correctly by patients than MDIs in India. Singh may be suggested that rotahalers are more likely to be was found only in 25.9% cases in the present study, it was MDIs followed by rotahalers with sparse use of MDIs with or without spacer, dry powder inhalers which are single dose or multidose and nebulisers. The most frequently used inhalation device in the present study was MDIs followed by rotahalers with sparse use of spacers and nebulisers. Although MDIs have been the most popular inhaler devices, yet its effective use is limited by improper inhalation technique ranging from 24-67 percent in reported series. Concurrent use of oral steroids with inhaled steroids will significantly increase the systemic side effects in the form of hypothyroidism-pituitary-adrenal axis suppression, osteoporosis, postsubcapularcatastic, myopathy, weight gain, skin bruising and increased susceptibility to infection. Forty one cases (56.9%) were on concurrent oral steroids in the present study.

The commonly used inhalation devices in asthma are MDIs with or without spacer, dry powder inhalers which are single dose or multidose and nebulisers. The most frequently used inhalation device in the present study was MDIs followed by rotahalers with sparse use of spacers and nebulisers. Although MDIs have been the most popular inhaler devices, yet its effective use is limited by improper inhalation technique ranging from 24-67 percent in reported series. The technique of using MDIs was incorrect in majority of cases (64%) in the present study. In comparison to MDIs, rotahalers are relatively simpler to use since these overcome the main hand-lung incoordination encountered in MDIs. The efficient use of rotahalers depends upon the generation of sufficient inspiratory flow so that the drug reaches the lungs in therapeutic amounts. In absence of inspiratory peak flow meters, a good inspiratory effort can be determined simply by observing the sound of rattling. Since the incorrect use of rotahalers, especially with regards to generation of adequate inspiratory flow, was found only in 25.9% cases in the present study, it may be suggested that rotahalers are more likely to be used correctly by patients than MDIs in India. Singh et al in a study of randomised comparison of rotahalers with MDIs with spacers in children, also observed that rotahalers are as effective as MDIs with spacers in view of its easier handling, low cost and equal efficacy.

55% cases learnt the inhalation technique from paramedical staff (nurses and pharmacists) and only 26.7% learnt the technique from doctors. The fact that most of the patients had improper inhalation technique, it is likely that most of the paramedical staff and doctors may not be familiar with the correct technique of using MDIs and the same has been demonstrated in other studies also. Using MDIs with spacers overcomes the problem of hand-lung incoordination, increase the delivery of drug and decrease the unwanted drug deposition in oropharynx. Spacers use is especially recommended for inhaled corticosteroids in order to decrease the systemic side effects and reduce the risk of oropharyngeal candidiasis. In acute severe asthma, using MDIs with spacers is as effective as using nebulisers. The general physician must utilize the usefulness of using spacers with MDIs. However, there was an infrequent use of spacers in the present study.

Peak flow monitoring provides objective assessment of the severity of bronchial asthma and has been recommended in assessment of moderate to severe persistent asthma. None of the patients in the present study was being monitored by peak flow meter.

In conclusion, although inhalation therapy is being used in a large number of asthmatic patients, yet it has not been effective in controlling bronchial asthma. The main reasons for this ineffective control are underuse of inhaled steroids, overuse of B2 agonists and incorrect use of inhaler devices. Since majority of asthma patients are first seen by general physicians, there is an urgent need to educate them about the appropriate use of inhaled steroids, as on demand use of short acting B2 agonists, avoiding the use of concurrent oral short acting B2 agonists, correct technique of using inhaler devices especially MDIs, usefulness of spacer devices and peak flow monitoring. Since a significant number of asthmatic patients learn inhalation technique from paramedical staff, there is also a need to educate them about the correct use of inhaler devices.

REFERENCES


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**Announcement**

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For further details, please contact: **Dr. Vineet Agrawal**, Organizing Secretary, ECG CON 2005, Rajapuria Heart Care and Research Centre Pvt. Ltd., 20, Ahilyabai Nagar, Lanka, Varanasi – 221005.

Tel: 0542-2367699; Res (Telefax): 0542-2367518;

Mob : 09839136900/09415225329; Email: rajapuria01@sify.com

**Dr. SB Gupta**, Hon. Secretary, ISE, Head, Department of Medicine and Cardiology, Central Railway Headquarters Hospital, Byculla, Mumbai – 400027.

Tel : 23717246 (Hosp); 22624556 (Res); 22651044 (Fax); Mob : 09821364565/09821638617;

Email : sbgupta@vsnl.net; Website : www.iseindia.org