Study To Assess Factors Contributing To Compliance Of Aerosol Therapy In Bronchial Asthma.

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Citation

Abstract

Objectives of the studyTo study the compliance of aerosol therapy in asthmatics.To know the factors contributing to non-compliance. Methodology:A total of 100 patients were studied. Once included in the study, patient's follow up was done for one to three months. Percentage compliance on aerosol therapy was calculated. Results: 100 patients of bronchial asthma who were started on aerosol therapy over duration of one year were included in the study. At the end of 3 months it was observed that among 100 patients, only 31 patients (31%) had regular compliance and 69 patients (69%) were non-compliant to aerosol therapy for bronchial asthma. Level of learning status of the individual had an important role for non-compliance, four times daily or multiple drugs, dislike of medication and distant pharmacies. Non-Drug factors include fears about side effects, anger about condition or its treatment, forgetfulness or complacency and attitudes toward ill health. To improve the compliance, whenever there were defaults various strategies were employed, through the patient's educational techniques, which included verbal praise, interactive communication skills tailoring the medications to the patient's routine and answering to the family's worry. This was done by a psychologist. After employing the various strategies of patient's education, the compliance increased in 23 patients (34.3%) among the earlier defaulted patients, while the remaining 44 patients (65.7%) were found to be noncompliant even after various educational techniques.

INTRODUCTION

Bronchial Asthma is considered a major public health problem affecting a large number of individuals of all ages. Globally, 100 to 150 million people suffer from asthma. Estimates indicate that, India has 20 – 28 millions asthmatics and the prevalence amongst children (5 to 11 years) is 10% to 15%.

Being a chronic medical condition, management of bronchial asthma requires, continuous medical care. Modern management of bronchial asthma mandates prolonged medication. Medications for asthma reverse and prevent symptoms and airflow limitations. A key issue in proper management of bronchial asthma is adherence to treatment. Poor compliance to prescribed therapy increases morbidity and mortality and it is increasingly being documented that long term compliance or adherence to prescribed therapy is hard to attain[2]. Studies have reported that 50% of patients with a chronic disease do not use their medication at all or do not use it as prescribed[3]. A key reason for poor compliance is that patients with a chronic disease do not have a satisfactory understanding of their condition and the reasons for using medication.

The economic burden of bronchial asthma to the society is well documented in industrialized countries[1]. Poor asthma control is responsible for a large proportion of the total cost of the disease and consequently, improving compliance and thereby control of the disease would decrease both direct and indirect cost.

The present study was undertaken to study the factors that influence patient's compliance with prescribed medication, list reasons for non-compliance and identify aspects in care of patients with asthma from the patient's point of view.

MATERIALS AND METHODS

The study was undertaken in the Respiratory medicine OPD of K.L.E.S Hospital and Medical Research Center, Belgaum, during the period 1st March 2004 to 28th February 2005 were. Children above 2 years of age, and adults who were diagnosed to have bronchial asthma for more than 1-year duration and patients receiving aerosol therapy for over six months were included. Those with acute severe asthma chronic obstructive pulmonary disease cardiac asthma were excluded. All patients were interviewed using a standard interview schedule and requested to maintain a diary

regarding the dosing of aerosol therapy. Apart from a detailed history and physical examination, pulmonary function test and peak expiratory flow rate were measured during the first visit. All patients were followed up for one to three months. At the end of 3 months compliance to treatment was arrived at after studying the patient diary noting, Pulmonary Function tests and Peak expiratory flow rate measurement. Compliant day was defined as one in which the prescribed number of puffs as prescribed were taken each day.

The economic status was classified as per modified B.G.Prasad classification4. Income levels initially proposed by Prasad can be converted into currently applicable levels by multiplying with a factor of 0.0493× Prevailing level of All India Consumer Price Index (AICPI) The average AICPI during the study period was 26. Hence, the per capita income in class I was 2,600 per head per month, in class II it was 1,300 to 2,340 per head per month, in class III it was between 780 to 1,274 per head per month, in class IV it was 390 to 754 per head per month and class V less than 390 per head per month

RESULTS

Figure 1

Table 1

Variables	N (%)	p
1. Gender		
Males	59(59%)	>0.05
Females	41(41%)	
2. Age		
Mean	36.2 (+ 17.4) yrs	
Median	35 yrs	
3. Duration of asthma (yrs)		
1 to 5 years	57 (57%)	>0.05
6 to 10 years	22 (22%)	
> 11 years	21 (21%)	
4. Education		
Illiterate	10 (10%)	<0.01
Primary	28 (28%)	
Secondary	30 (30%)	
Graduate	28 (28%)	
Post graduate	4 (04%)	
5. Economic status		
Lower	37 (37%)	<0.05
Middle	46 (46%)	
Upper	17 (17%)	

Note: Significance testing undertaken with respect to compliance

A total of 100 patients were studied during the period. The majority of the patients (39%) were in the age group of 21-40 years. While 17% were adolescents, children and those more than 70 years were 5% and 6% respectively. The male: female ratio was 1: 4. In all, 58 patients (58%) had either primary or secondary education and 10% were illiterate. The majority of the patients belonged to middle

socio-economic status (Table 1).

Nearly one-third of the patients (31%) was regular to aerosol therapy and did not miss a single dose and the remaining (69%) were non-compliant. Among male patients, regular compliance was observed in 17 patients, while it was 12 among females. A higher number of male patients missed more that 20 doses over duration of 3 months (56.6%) as compared to female patients (43.3%). While the association between male and female was not significant, education status was significantly and there was moderate correlation between education status and compliance. Economic status was significant and there was moderate correlation to compliance.

Figure 2

TABLE 2

	Irregular (n = 69)	Regular (n = 31)	Test of significance
Age			
Mean	37.0	34.4	F = 1.173, df = 48,51; p > 0.005
SD	17.0	18.5	
Duration of asthma in years			
1 to 5 years	37	20	χ^2 = 1.2 df = 2; p .0.05
5 to 10 years	17	5	
More than 10 years	15	6	
Side effects			
No side effect	53	30	p < 0.05
Side effect present	16	1	
Drugs compliance			
DPI	64	21	p <0.01
MDI	5	10	

More than two-third of patients (80%) were using dry powder inhalers (DPI), and 20% were using metered dose inhalers (MDI) and remaining 6 patients (6%) used combination of the drugs. A total of 69 patients (69%) defaulted to the aerosol therapy and the default rate was higher among females (70.7%) than males (64.4%).

Non drug factors were the key reasons for decreased compliance. The major non-drug factors were fears about side effects to the medications (18%), higher cost of the therapy (10%), feeling of well being on therapy (8%) and negligence on the part of the patients (7%). Other reasons included forgetfulness or complacency and attitudes toward ill health, anger about condition, etc., Amongst the reasons for drug factors for non-compliance included difficulties with inhaler devices, awkward regimes (e.g., four times daily or multiple drugs), dislike of medication and distant pharmacies.

Various strategies of patient's education ((verbal praise (12%), interactive communication skills (11%), tailoring the medications to the patient's routine (10%) and answering to the family's worry (10%)) was employed with the help of a psychologist. The compliance improved in 23 patients

(34.3%) who had defaulted earlier. The remaining 44 patients (65.7%) were found to be noncompliant. The improvement in the compliance was observed to be better in female patients (48.1%) as compared to male patients (25%).

DISCUSSION

Asthma, a chronic lung disease that affects people of all ages, races, and ethnic groups, is a growing concern throughout the world. As a result, there has been a considerable interest in a number of areas.

There is a need for educating the patient about asthma disease and medications used like DPI/ MDI to be taken on regular basis as prescribed. In the study conducted in Trinidad regarding the understanding and use of inhaler medication by asthmatics, it was observed that educating patients, with a focus on children and the elderly, inhaler techniques and reinforcing understanding of asthma medications could improve asthma management to a great extent.

The present study was conducted to know the percentage of compliance with aerosol therapy in bronchial asthma patients and reasons for non-compliance. An effort was also made to improve the patient compliance via the patient education programme.

Rhodes et al[6]observed higher prevalence of asthma in female patients as compared to males. Females with current asthma, reported adult onset of asthma more often, and males reported childhood onset more often. Sex differences were identified for the eight asthma-control characteristics. Females presented higher asthma risk and poorer asthma profiles than males.

Gibson et al[7] conducted a study to study the compliance with inhaled asthma medications in pre-school children. In pre-school children the parents supervise and are responsible for drug administration. In this study it was observed that parental supervision would result in good compliance. It was concluded that compliance with inhaled prophylactic therapy is poor in pre-school children with asthma whose medication is administrated under parental supervision.

Lewis and Lewis[8] investigated the consequences of empowering children to care for themselves. In the present study, children and adolescent constituted 22% out of which 4 (80%) children less than 10 years of age were non-compliant and in adolescent age group 11 children (64.7%) were non-compliant to regular therapy.

EDUCATIONAL STATUS

There were 4 patients with higher education (post graduation) and all this patients had regular compliance with the therapy. Patients having graduation degree (9patients) also had complete regular therapy with the medications. They did not default a single time. Patients having secondary education had a default rate of 60%, patients having primary education had a high default rate of 71.4% while illiterate patients had a higher default rate 100%. They also missed more number of doses of the medications. Education status was significant and there was moderate correlation between education status and compliance

Valid educational programme for asthmatics can improve the knowledge of the disease and to understand how they look after themselves by careful evaluation of their own symptoms and respiratory function. Patients attending two lessons with helpful training tools can increase significantly asthma knowledge, treatment compliance and patient self-management[9]

In the present study Economic status was significant and there was moderate correlation to compliance The relationship between hospital characteristics, The economic status of the patient is important in view of management of a case of bronchial asthma as medications has to be taken on a regular basis for long term. Length of stay (LOS), and costs per discharge was studied from the Taiwan National Health Insurance Research Database covering the period from 1997 to 2001[10] Study subjects were identified from the database by principal diagnosis of asthma or asthmatic bronchitis, with a total of 139,630 cases being included in the study. Multiple-regression analyses were performed to explore the relationship between LOS, costs per discharge and hospital characteristics, adjusting for age, gender, and discharge status of patients, as well as complications or co morbidities. The regression analyses showed that, compared with district hospitals, medical centers and regional hospitals have longer and more statistically significant LOS, as well as higher costs. Hospitals operating on a for-profit basis have shorter LOS and lower costs than public and not-for-profit hospitals. This study shows the existence of wide variations in LOS and costs per discharge for asthma hospitalizations, between the various types of hospitals

The aim of patient education in bronchial asthma is to provide the patient and the patient's family with suitable information and training so that the patient can keep well and adjust according to a planned medication.

The factors involved in non-compliance in the present study are multifactor. A total of 69 patients (69%) defaulted to the aerosol therapy; the default rate was higher 41% among female patient, while it was 59 % among male patients. The most common reasons for the higher default rates were side effects to the medications (18%), higher cost of the therapy (10%), feeling of well being on therapy (8%) and negligence on the part of the patients (7%). Other causes for non-compliance are drug factors, which includes difficulties with inhaler devices, awkward regimes (e.g., four times daily or multiple drugs), dislike of medication and distant pharmacies. Non-Drug factors include fears about side effects, anger about condition or its treatment, forgetfulness or complacency and attitudes toward ill health.

Recently, a study by Johnson et al11 observed sub optimal adherence for inhalation therapy to be 63% in patients with COPD. Adherent patients had greater understanding about their illness and options for managing the illness. They also had greater confidence that current management would keep their illness under control. Satisfaction with and faith in the treating physicians were found to be low among the less adherent group compared to highly adherent group. It was also observed that patients who reported sub optimal adherence found their medications to be more physically challenging and unpleasant compared to their counterparts. Less adherence patients believed that their doctors had limited management options to offer them. According to Dowel and Hudson10, patients who accept their medication regimen fully as prescribed by their doctors are likely to assume a passive role in managing their illness and relinquish control to the doctor.

Differences in both intentional and unintentional health behaviors were observed between the two groups by Johnson et al11. Adherent patients were less likely to be confused about their medications, which might have been result of their greater medication knowledge. Less adherent patients were more likely to vary their recommended management to suit their life style or based on how they felt. "Routinization" i.e., the ability to fit to a medication regimen to one's daily routine, has been recognized as a major determinant of improved adherence11.

Associated co morbid condition is also one of the important factors responsible for the noncompliance in therapy. Depression is known to be a risk factor for the nonadherene12. In the present study any specific questions about depression in the questionnaire were avoided due to the sensitivity of the topic and concerns about patient non

response. Patient's acceptance of the disease process and recommended treatment, knowledge about and faith in the treatment, effective patient-clinician interaction, and routinization of drug therapy are critical for optional medication adherence in bronchial asthma patients.

In early consultation For example, different inhaler devices should be demonstrated, and patients should take part in a decision as to which is most suitable for them. In the present study strategies to improve patients compliance was undertaken like tailor the medications to patients routine (10%), review the patients self-management plan (8%), patients were given special attention and encouragement (8%+8%), they were praised for their inhaler techniques (12%), some of the patients family worries were answered (10%) and there was interactive communications techniques (11%). This was organized for the noncompliant patient with the help of a psychologist.

Patients should be given adequate opportunity to express their expectation of both the asthma and its treatment. It is reasonable for most patients to expect freedom from symptoms day and night, no restriction on activities, including sports and best possible lung function (e.g., peak expiratory flow). In a study conducted in Sweden on compliance with medications in asthma patients the important factors that resulted in noncompliance age gender duration of the disease and patients view on asthma 13.

CONCLUSION

The percentage of regular compliance on aerosol therapy in bronchial asthma is 31%, which is significantly low and the percentage of non-compliance of aerosol therapy in bronchial asthma is 69% and is highly significantly. Side effects was significant there was moderate correlation with side effects to compliance i.e. lesser side effects better compliance

Some patients had a poor follow-up and missed the doses, as they felt better. Regular compliance is an important aspect in the management and control of bronchial asthma, so patients should be advised to take regular and long-term aerosol therapy for reducing the acute attacks of asthma and maintaining the disease state. Thus it may influence the long-term prognosis by reducing the attacks of asthma.

The best predictor of compliance is patient's attitude toward the treatment and medicine in general. Patients who have faith in the physician and the prescribed method of treatment are more likely to adhere to the treatment than patients who

have a negative attitude toward treatment7. The same is true of the parents of children with asthma. In a study by Riekert et al14 parents who had an unfavorable attitude towards the use of inhaled therapy were less likely to administer their child's treatment according to physician guidelines. To ensure better compliance, patients must believe that by following a prescribed regimen, the severity of their condition will be reduced.

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