



CLINICAL PROFILE OF ASTHMA IN MALE SMOKERS

Medicine

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ABSTRACT

Introduction: Asthma is traditionally defined as a functional abnormality with reversibility in forced expiratory volume in 1st second of more than 15% as opposed to irreversible or fixed airway limitation in chronic obstructive pulmonary disease (COPD). This study aims to assess the clinical symptoms, physical findings and laboratory results in smoker patients reporting with symptoms suggestive of bronchial asthma.

Material and method: This study was conducted in department of Respiratory Medicine of National Institute of Medical Sciences and Research, Jaipur on 50 outdoor male smokers presented with respiratory complaints during period of September 2020 to May 2021.

Result: 100 patients enrolled in this study. And 50 patients were diagnosed as bronchial asthma on the basis of steroid trial. Mean age of patients in our study is 48.00±10.41. Shortness of breath (48%) was the commonest complaint followed by cough (24%), expectoration (20%) and last was chest pain (8%). There were more current smokers (48%) followed by ex smokers (32%) and least were reformed (20%). The most common symptoms in past history of patient was seasonal variation (96%) followed by eye itching (32%), chest tightness (60%), sneezing (56%), dust allergy (32%), non-respiratory allergy and wheeze (24%) and last was positive family history of asthma or allergy.

Past history showed different variation in which any one symptom was present in 100% of patients, followed by 2 symptoms (95%), 3 symptoms (84%) and 4 symptoms (52%).

Conclusion: This study concludes that presence of any two of the above described past symptoms or variables suggestive of asthma in past are diagnostic of asthma in smoker patients even in the presence of irreversible or partially reversible airway obstruction.

KEYWORDS

Asthma, FEV, Steroid, Spirometry, Wheeze

INTRODUCTION

Asthma is traditionally defined as a functional abnormality with reversibility in forced expiratory volume in 1st second of more than 15% as opposed to irreversible or fixed airway limitation in chronic obstructive pulmonary disease (COPD).

Smoking is being increasingly studied in the pathogenesis of asthma. In most developed countries 25% of adults with asthma are current cigarette smokers. Asthma and active cigarette smoking interact to cause more severe symptoms like rapid decline in lung functions, impaired short term therapeutic response to steroids¹. Steroids trial have been used in which fixed airflow limitation has been defined as a post bronchodilator FEV₁ of <80% predicted, in the presence of reduced FEV₁/FVC ratio, after a 14 days course of oral prednisolone, 40 mg per day. A positive response indicates asthma. Disadvantage of this trial is development of side effects of steroids. These are stomach irritation, fluid retention, elevated blood sugar, hunger, sleepiness, blurry vision, short temper, difficulty concentration, weight gain, high blood pressure. When steroids are stopped, one may experience different side effects like lack of energy and appetite, stiffness of joints, flu like symptoms.

This study aims to assess the clinical symptoms, physical findings and laboratory results in smoker patients reporting with symptoms suggestive of bronchial asthma.

MATERIAL AND METHOD

This study was conducted in department of Respiratory Medicine of National Institute of Medical Sciences and Research, Jaipur on 50 outdoor male smokers presented with respiratory complaints during period of September 2020 to May 2021. Detailed clinical history with smoking history was taken. Thorough physical examination was done. All laboratory blood investigations and radiological examination were conducted. Sputum smear examination by Ziehl-Neelsen method was done. Patients showing less than 12% post bronchodilator reversibility spirometry was recruited in this study. All patients who were more than 18 years, FEV₁/FVC ratio less than 70%, Current/reformed/ex-smoker with respiratory difficulty and increase in FEV₁ or FVC <200ml after 15 min of 200 microgram of salbutamol inhalation were included in this study.

Patients with prior diagnosis of asthma, active pulmonary tuberculosis, pneumonia malignancy, already on bronchodilators or inhaled steroid, hypertensive, diabetic, cardiac/hepatic/renal disease and with chest wall deformity were excluded from this study.

Study procedure

All the study patients were given a trial of oral prednisolone 40mg once daily for 2 weeks and patients were asked not to use any bronchodilators or inhaled steroids. After 2 weeks spirometry was done to measure reversibility (>12% improvement in FEV₁ or FEV₁/FVC). Those patients who showed reversibility were labeled as bronchial asthma.

Patients were reassessed and their past medical history was analysed to know symptoms of asthma like wheeze, chest tightness, seasonal variations, eye itching, sneezing, non-respiratory allergies, dust allergy and family history of asthma or allergy.

FEV₁, FEV₁/FVC was measured using spirometer. All patients were tutored to use prior to spirometry.

STATISTICAL ANALYSIS

It is performed using SPSS version. All data were summarized as mean. Chi square test was used to compare the differences in variables between the two groups. A two-sided p value less than 0.05 was considered statistically significant.

RESULT

100 patients enrolled in this study. And 50 patients were diagnosed as bronchial asthma on the basis of steroid trial.

Table 1 showed that mean age of patients in our study is 48.00±10.41. Table 2 showed that shortness of breath (48%) was the commonest complaint followed by cough (24%), expectoration (20%) and last was chest pain (8%). Table 3 showed that there were more current smokers (48%) followed by ex smokers (32%) and least were reformed (20%). Table 4 showed distribution of pulmonary function tests in Mean±SD. Table 5 showed that most common symptoms in past history of patient was seasonal variation (96%) followed by eye itching (32%), chest tightness (60%), sneezing (56%), dust allergy (32%), non-respiratory allergy and wheeze (24%) and last was positive family history of asthma or allergy.

Past history showed different variation in which any one symptom was present in 100% of patients, followed by 2 symptoms (95%), 3 symptoms (84%) and 4 symptoms (52%) as shown in table 6.

TEC was more in all the patients as compared to TLC (8603.34/299) as shown in table 7.

Table 1:- Distribution of patients according to age

Age group	Frequency	Percentage (%)
<50 years	38	76
>50 years	12	24
Total	50	100
Mean +SD	48.00+10.41	

Table 2:- Distribution of patients according to complaints

Symptoms	Frequency	Percentage (%)
Chest pain	4	8
Cough	12	24
Expectoration	10	20
SOB	24	48

Table 3:- distribution of patients according to smoking

Smoking status	Frequency	Percentage
Ex smoker	16	32
Reformed	10	20
Current smoker	24	48
Total	50	100

Table 4:- Distribution of pulmonary function tests (n=50)

FVC (Mean \pm SD)	FEV1 (Mean \pm SD)	FEV1/FVC (Mean \pm SD)	Post bronchodilator FEV1 (Mean +SD)	Post steroid FEV1 (Mean \pm SD)
2.69 \pm 0.86	1.39 \pm 0.59	50.01 \pm 11.00	1.47 \pm 0.56	1.65 \pm 0.716

Table 5:- Distribution of patients according to past history

Symptoms	Frequency	Percentage (%)
Wheeze	12	24
Chest tightness	30	60
Seasonal variation	48	96
Eye itching	32	64
Sneezing	28	56
Dust allergy	16	32
Non-respiratory allergy	12	24
Family history	10	20

Table 6:- Distribution of patients according to number of symptoms/parameters in the past history

Past history	Frequency	Percentage (%)
Any 1 of above	50	100
Any 2 of above	48	96
Any 3 of above	42	84
Any 4 of above	26	52

Table 7:-Distribution of patients according to TLC and TEC (n=50)

Variables	Frequency (Mean \pm SD)
TLC	8603.34 \pm 2303.14
TEC	299.00 \pm 90.54

DISCUSSION

Intake in this study were 100 male smoker patients, presenting with shortness of breath and cough with or without sputum production and partially/ irreversible airway obstruction on post bronchodilator spirometry. Steroid trial was given to diagnose bronchial asthma and COPD patients. Out of 100 patients, airway obstruction was found to be reversible in 50, hence these were diagnosed as bronchial asthma.

Mean age of patient in our study was 48 years. Melbye et al² and Ringback et al³ reported mean age of 57.4 years and 46.8 years respectively which is comparable to our study.

Many studies have reported that TEC is increased in asthma. In our study we found that mean TEC is 299.00 which is comparable to studies done by Singh et al⁴ (663.4). as compared to TEC the mean TLC in our study was slightly less than TEC which is comparable to Singh et al⁴.

Our study showed that current smokers (48%) are more affected by asthma which is higher than study done by Melbye et al² which showed 23.8% of current smokers affection.

Although all the study patients had initial irreversible airway obstruction, yet the mean FVC values were higher in asthma patients.

The natural history is characterized by typical symptoms of allergy diathesis. Other studies like Lunn et al⁵, Kelly et al⁶, Martin et al⁷ and Russell et al⁸ have reported that wheezing was a common symptom in early life with development of asthma in later life. Roofda et al⁹ and Charles et al¹⁰ have shown association of asthma with family history of allergy, asthma, eczema, exposure to allergens and smoke. Bousquet et al¹¹ observed that wheeze, shortness of breath and chest tightness are common symptoms with asthma. Khalid et al¹² showed that wheeze, eye itching and eczema are three symptoms which if present in past history can cause asthma in later life.

In our study we recorded that most common symptoms in past history of patient was seasonal variation (96%) followed by eye itching (32%), chest tightness (60%), sneezing (56%), dust allergy (32%), non respiratory allergy and wheeze (24%) and last was positive family history of asthma or allergy. Aggarwal et al¹³, Woolcock et al¹⁴ and Terreehorst et al¹⁵ reported significant association of asthma and atopy to dust. Sisteck et al¹⁶ showed 75% sensitivity for wheezing and 80% for cough and chest tightness. Zedan et al¹⁷ showed wheezing in 98.6% of asthma patients. Nystad et al¹⁸ and Zedan et al¹⁷ reported chest tightness in 59.3% and 60% respectively. Wallace et al¹⁹ showed nasal symptoms in 28-78% of asthma patients and allergic rhinitis in 17-38%. Grossman et al²⁰ showed allergic rhinitis in 60-78% asthmatics. Melbye et al² reported 53.8% association between allergic rhinitis and asthma.

CONCLUSION

This study concludes that presence of any two of the above described past symptoms or variables suggestive of asthma in past are diagnostic of asthma in smoker patients even in the presence of irreversible or partially reversible airway obstruction.

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