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Original Research Article

Spirometry as a Practical Tool for Detecting Respiratory Conditions in Smokers: An Institutional Based Study

S K Pathak

Assistant Professor, Department of TB & Chest,
Narayan Medical College, Jamuhar, Sasaram, Bihar, India.

ABSTRACT

Background: Detecting respiratory conditions at earlier stages can also increase the smokers for quitting smoking. Spirometry aids in diagnosis and evaluating the progression disease. The aim of the present study was to determine the role of spirometry in detecting of respiratory conditions in smokers.

Materials and Methods: All the subjects were made aware regarding the harmful implications of smoking and that cessation could reduce the symptoms. Smoking index was determined to calculate the frequency of smoking, by multiplying number of cigarettes smoked per day with the number of years of smoking. Probability value of less than 0.05 was regarded as significant.

Results: There were 41 subjects elder than 40 years of age. There were 59 patients younger than 40 years of age. There were 6 patients younger than 40 years old age and 30 patients more than 40 years of age with airway obstruction. There were 6 patients with smoking index lesser than 200 that had airway obstruction and 25 patients with smoking index more than 200 that had airway obstruction.

Conclusion: Spirometry came out to be an important tool for detecting at an early stage.

Keywords: Spirometry, Pulmonary, Respiratory.

*Correspondence to:

Dr. S K Pathak,
Assistant Professor,
Department of TB & Chest,
Narayan Medical College,
Jamuhar, Sasaram, Bihar, India.

Access this article online	
Website: **www.ijmrp.com**	**Quick Response code**
DOI: **10.21276/ijmrp.2017.3.2.099**	

INTRODUCTION

Respiratory conditions are major reason of morbidity and mortality around various developing and developed nations. Due to increased risk factors, the frequency of respiratory illnesses can elevate in the future decades. With changes in the pattern of lifestyle and elevated life expectancy of subjects, there is a upsurge in diseasedpatients.[1] According to the global burden of disease, COPD ranks the sixth main reason of death in 1990 and 2020 it may rank to third.[2,3] According to the metaanalysis study amongst the Indian populace, the occurrence of COPD was 5% amongst males and 2.7% in females more than 30 years.[4] Tobacco smoking tobacco is the major risk factor for COPD universally but in different nations air pollution because of burning fuel and biomass is becoming a contributing risk factor towards respiratory diseases. The main reason for looking for medical care in patients is dyspnea seen by pupils on mild to moderate exertion.[5] Studies have proved that smoking cessation can reduce the speed of decline of ventilatory function.[6,7] Detecting respiratory conditions at earlier stages can also increase the smokers for quitting smoking. Spirometry aids in diagnosis and evaluating the progression disease.[1] The aim of the present study was to determine the role of spirometry in detecting of respiratory conditions in smokers.

MATERIALS AND METHODS

The present study was conducted in the Department of TB & Chest, Narayan Medical College, Jamuhar, Sasaram, Bihar (India) amongst subjects with tendency of respiratory diseases. The study consisted of male subjects more than 35 years age and few or no respiratory clinical features other than coughing. Patients having diagnosis of asthma or on bronchodilators or corticosteroids were excluded from the study. The study was approved by the institutional ethical board and all the subjects were informed about the study and a written consent was obtained from all. All the subjects were made aware regarding the harmful implications of smoking and that cessation could reduce the symptoms. Smoking index was determined to calculate the

frequency of smoking, by multiplying number of cigarettes smoked per day with the number of years of smoking. All the patients were subjected to spirometer for determining the resistance of air ways. All the data was arranged in a tabulated form and analysed using SPSS software. Student t test was used for the quantitative analysis. Probability value of less than 0.05 was regarded as significant.

RESULTS

The present study enrolled 100 patients. The mean age of the subjects was 42.18+/- 4.30 years. Table 1 shows the distribution of subjects according to smoking index and age. There were 41 subjects elder than 40 years of age. There were 59 patients younger than 40 years of age. The mean smoking index amongst subjects more than 40 years was 455.4±264.2 and the mean smoking index amongst subjects less than 40 years was 211.8±103.2.

Table 2 shows the distribution subjects according to gold's criteria. There were 67% patients with mild obstruction. There were 33 patients with moderate obstruction. Table 3 shows the subjects with airway obstruction according to age and smoking index. There were 6 patients younger than 40 years old age and 30 patients more than 40 years of age with airway obstruction. There were 6 patients with smoking index lesser than 200 that had airway obstruction and 25 patients with smoking index more than 200 that had airway obstruction.

Table 1: Distribution of subjects according to smoking index and age

Age	Frequency	Smoking Index	Frequency
>40 years	41	455.4±264.2	4
<40 years	59	211.8±103.2	57

Table 2: Distribution of subjects according to gold's criteria

GOLDS Criteria	Frequency
Mild obstruction	67
Moderate obstruction	33

Table 3: Subjects with airway obstruction according to age and smoking index

Variable	Frequency	P Value
Age		<0.05
<40 years	6	
>40 years	30	
Smoking Index		
<200	6	<0.05
>200	25	

DISCUSSION

A proposal to smoking cessation can be assisted by spirometry for diagnosing respiratory diseases and this can lead to a significant decrease in the patients. But there is no confirmation to this fact.[8] As per the prevention study initiated in Finland for subjects of chronic bronchitis in 1998 regarded spirometry for the analysis of the situation and was followed by cessation of smoking. By 2003, a reduction in the smoking frequency and admission of patients was observed that clearly indicated the reduction in the prevalence of respiratory conditions with spirometry.[9] Screening for patients in the high risk populace of Poland has been initiated with spirometry. Around 11027 smokers elder than 40 years were checked and 24.3% patients with obstruction of airflow.[10] According to Gorecka et al[11], diagnosis of airflow restriction aids in reducing the patients with smoking. According to our study, the mean age of the subjects was 42.18+/- 4.30 years. There were 41 subjects elder than 40 years of age. There were 59 patients younger than 40 years of age. The mean smoking index amongst subjects more than 40 years was 455.4±264.2 and the mean smoking index amongst subjects less than 40 years was 211.8±103.2. There were 67% patients with mild obstruction.

There were 33 patients with moderate obstruction. There were 6 patients younger than 40 years old age and 30 patients more than 40 years of age with airway obstruction. There were 6 patients with smoking index lesser than 200 that had airway obstruction and 25 patients with smoking index more than 200 that had airway obstruction. The overall incidence of respiratory diseases amongst subjects has been found to be 5-10%. Two techniques have been regarded for the quick diagnosis of such disease and that are case finding methodology and high risk screening.[15,16] Both of them have their own advantages and disadvantages. According to Stralelis G, et al[17] to determine a method of detection of COPD at early stage with spirometry amongst 512 smokers, between 40-55 years and they observed obstruction in 27% subjects.

CONCLUSION

Respiratory conditions worsen with age and smoking. Prognosis of the condition improves with smoking cessation and awareness of the patients. Spirometry helps in detection of the condition at early stages when the associated clinical signs and symptoms just start coming. Spirometry came out to be an important tool for detecting at an early stage.

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Cite this article as: S K Pathak. Spirometry as a Practical Tool for Detecting Respiratory Conditions in Smokers: An Institutional Based Study. Int J Med Res Prof. 2017; 3(2):464-66.
DOI:10.21276/ijmrp.2017.3.2.099