Original Article

TRENDS OF PULMONARY IMPAIRMENT IN PERSONS WITH TREATED PULMONARY TUBERCULOSIS

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ABSTRACT

Background: Post tubercular impairment can manifest as obstructive airway disease, mixed defect, or as pure restrictive defect. It is important to identify patients with pulmonary function deterioration after the completion of pulmonary TB treatment. Present study was conducted to investigate the trends of the changes in pulmonary function in patients with pulmonary tuberculosis after the completion of treatment.

Materials & Methods: 48 cured pulmonary tuberculosis patients who has taken full course of anti-tubercular therapy (age ranges between 18-60 years) were included. Patients presented to department with complain of dyspnea/cough. Spirometry was done.

Results: Obstructive impairment was seen commonly in 56.25% with mild to moderate degree of obstruction.

Conclusion: All 3 types of pulmonary function impairment seen in the study group that indicates dyspnea in a cured pulmonary TB patient can be caused by any type. Obstructive defect was seen more commonly than other types. Presence of minimal lesions was also an independent risk factor for airflow obstruction.

KEYWORDS: Lung Diseases, Pulmonary function, Spirometry, Tuberculosis.

INTRODUCTION

Patients who have completed a course of treatment for pulmonary tuberculosis (TB) are frequently left with respiratory disability due to impairment in pulmonary function caused primarily by to fibrocavitary lung disease. Some patients experience significant hypoxaemia with pulmonary hypertension and ventilatory defects.[1-4] High prevalence of obstructive lung disease is seen in cured pulmonary TB patients.[5]

Pulmonary tuberculosis (TB) can lead to parenchymal destruction of lung tissue by up-regulation of several proteases and dysregulation of protease control.[6] The histopathological abnormalities in cured TB patients include fibrosis, bronchiectasis and bronchial stenosis, that can cause pulmonary function abnormalities.[7] Some previous studies have evaluated changes in pulmonary function after pulmonary TB treatment and stated that 48.7% to 76% of patients had pulmonary function abnormalities after completing pulmonary TB treatment.[8-11] Some studies in past have shown obstructive defects as the main abnormality in cured TB patients, but recently studies have shown that functional abnormalities of lungs could be obstructive, restrictive, or mixed defects.[9-11] The impairment in pulmonary function after completing pulmonary TB treatment is related to long-term respiratory symptoms, which affect quality of life.[3,12]

India accounts for 26% of Global Tuberculosis burden.[13] Post tubercular impairment can manifest as obstructive airway disease, mixed defect, or as pure restrictive defect.[14]It is important to identify patients with pulmonary function deterioration after the completion of pulmonary TB treatment. However, little is known about the trends in the changes in pulmonary function associated with pulmonary function deterioration. Therefore, weconducted a study to investigate the trends of the changes in pulmonary function in patients with pulmonary tuberculosis after the completion of treatment.

MATERIAL AND METHODS

Present study was carried out in Department of Pulmonology, Adesh institute of medical science and research, Bathinda, Punjab (INDIA) from March 2014 to Feb 2015.48 cured pulmonary tuberculosis patients who has taken full course of anti-tubercular therapy (age ranges between 18-60 years) were included. Patients presented to department with complain of dyspnea/cough. All patients included were non-smokers and cured pulmonary TB patients with negative sputum microscopy and X-ray chest normal or showing inactive lesions. Patients were history of Bronchial Asthma, Interstitial lung diseases, Cardiac diseases, Anemia or occupational lung diseases were excluded. Data regarding age, gender, diagnosis, time of completion of anti TB treatment, smoking history, occupational history were recorded. X ray chest, sputum AFB, ECG, Hb%done.

RESULTS

48 patients were included and were subjected to the spirometry after taking informed consent. The age of patients was ranging from 18 years to 60 years. The duration of interval between completion of Anti Tubercular Therapy and development of dyspnea is variable ranging from 2 month to 8 years. Spirometry was done. The readings are classified as obstructive, restrictive and mixed. Obstructive pattern again divided into mild, moderate & severe. Obstructive impairment was seen commonly in 56.25%with mild to moderate degree of obstruction.(Table1, 2)

DISCUSSION

During present study, all 3 types of pulmonary function impairment seen in the study group that indicates dyspnea in a cured pulmonary TB patient can be caused by any type. Obstructive defect was seen more commonly than other types (56.25%), this finding is consistent with previous studies.[8,12,15] Among 27 cases of Obstruction 11(40.74 showed mild, 12(44.44%)cases showed Moderate, 4(14.81%) cases showed severe obstruction (Table: 2).

Lee SW et al. reported that previous TB was a risk factor for obstructive lung disease. The proportions of subjects with previous TB lesion increased as the severity of obstructive lung disease, suggesting previous TB is an important contributing factor for obstructive lung disease.[16]In present study, restrictive impairment is seen in 10.42% of cases. Some studies however shows conflicting results and describes restrictive abnormality as most common.[17,18]

A history of TB may affect lung function by pleural change, bronchial stenosis, or parenchymal scarring. TB increases the activity of the matrix metalloproteinases, thus contributing to pulmonary damage.[19]. Extensive TB lesions may produce restrictive changes, with reduced transfer of carbon monoxide in the lung.[20] However; we concluded that the presence of minimal lesions was also an independent risk factor for airflow obstruction. TB infection is associated with

airway fibrosis and the immune response to mycobacteria could cause airway inflammation, a characteristic of obstructive lung disease.[21]

CONCLUSION

All 3 types of pulmonary function impairment seen in the study group that indicates dyspnea in a cured pulmonary TB patient can be caused by any type. Obstructive defect was seen more commonly than other types. Presence of minimal lesions was also an independent risk factor for airflow obstruction.

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Table 1: Results of Pulmonary Impairment of present study

Type of impairment	n (Number of cases)	%
Obstructive	27	56.25
Restrictive	5	10.42
Mixed	16	33.33

Table 2: Degree of Obstruction in patients

Degree of Obstruction	n (Number of Cases)	%
Mild	11	40.74
Moderate	12	44.44
Severe	4	14.81

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