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Original Article

Evaluation of Post Tubercular Sequelae in Cured TB Patients at a Tertiary Care Hospital

Sanjay N. Murudkar[1], Ramesh Yeshwant Wagh[2*]

[1]Assistant Professor, Department of Pulmonary Medicine, Navodaya Medical College Hospital & Research Centre, Navodaya Nagar, Raichur, Karnataka, India.

[2]Professor, Department of Community Medicine, Chennai Medical college Hospital & Research Centre, Irungalur, Tiruchirapalli, Trichy, Tamil Nadu, India.

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***Correspondence to:**
Dr. Ramesh Yeshwant Wagh,
Professor, Department of Community Medicine, Chennai Medical college Hospital & Research Centre, Irungalur, Tiruchirapalli, Trichy, Tamil Nadu, India.

ABSTRACT

Background: Tuberculosis (TB) remains one of the world's deadliest communicable diseases. The present study was conducted to assess post tubercular sequelae in cured TB patients.

Materials & Methods: 64 treated cases of tuberculosis of both genders were divided into 2 groups of 32 each. Group I patients had patients who completed treatment within a period of 6 months and group II comprised of multidrug-resistant pulmonary tuberculosis patients who completed treatments of longer duration after the failure of the initial treatment.

Results: In group I, males were 20 and females were 12 and in group II, males were 22 and females were 10, BMI was 21.6 Kg/m^2 in group I and 18.2 Kg/m^2 in group II, 6 minutes' walk was 480.6 meters in group I and 332.6 meters in group II. The difference was significant (P< 0.05). Ventilatory defect found to be normal in 7, mild in 16 and 2, moderate in 5 and 5 and severe in 4 and 25 in group I and group II respectively. The difference was significant (P< 0.05).

Conclusion: Patients with multidrug-resistant pulmonary tuberculosis who have undergone multiple treatments have more severe respiratory and functional impairment than patients who have had just a single treatment.

KEYWORDS: Multidrug-Resistant Pulmonary Tuberculosis, BMI, Walk.

INTRODUCTION

Tuberculosis (TB) remains one of the world's deadliest communicable diseases. In 2013, an estimated 10.4 million people developed TB and 1.3 million died from the disease. TB related morbidity and mortality remain particularly high in African countries, mainly due to the impact of HIV, sustained poverty and food insecurity as well as due to treatment challenges including the rise in drug-resistant TB.[1] For the past 40 years, treatment success in tuberculosis has been defined as the eradication of active infection whilst preventing resistance and recurrence, achieved through multidrug antimicrobial treatment.[2]

Current estimates of the global TB disease burden include incidence and prevalence of active TB, TB death rates, and disability-adjusted years of life (DALY) lost due to active TB, but do not consider DALYs lost due to long-term disability due to TB sequelae or reduced longevity in patients considered cured.[3] Tuberculosis (TB) continues to be a chronic infection with very high rates of morbidity and mortality. It has been estimated that each year there are 8.9 million new cases and 1.6 million deaths worldwide. Brazil is the 19th highest country in the world in terms of the number of TB cases and within Brazil, Porto Alegre is the state capital that has the highest incidence of the disease.[4,5] Post tuberculosis patients may present with residual lesion like cavities, fibrosed lung parenchyma or nodular infiltrates, or have a mix of these pulmonary pathologies. This immense variability in the post tuberculosis lung function impairment may relate to host–pathogen interactions and the multiple immunological events that can follow.[5]

The present study was conducted to assess post tubercular sequelae in cured TB patients.

MATERIALS & METHODS

The present study was undertaken in Department of Pulmonary Medicine, Navodaya Medical College Hospital & Research Centre, Navodaya Nagar, Raichur, Karnataka (India) with the aim of assessing post tubercular sequelae in cured TB patients. A total of 64 patients were enrolled in the present research. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A Performa was made and complete data of all the patients was recorded. Patients' profile comprised of name, age, gender etc. Patients were divided into 2 groups of 32 each. Group I patients had patients who completed treatment within a period of 6 months and group II comprised of multidrug-resistant pulmonary tuberculosis patients who completed treatments of longer duration after the failure of the initial treatment. Parameters such as lung function by spirometry the strength of respiratory muscles through the manovacuometry and the distance walked during the 6-min walk (6MWT) was performed. Chest radiographs were performed at the end of treatment. Results thus obtained were statistically analysed. P value <0.05 was considered significant.

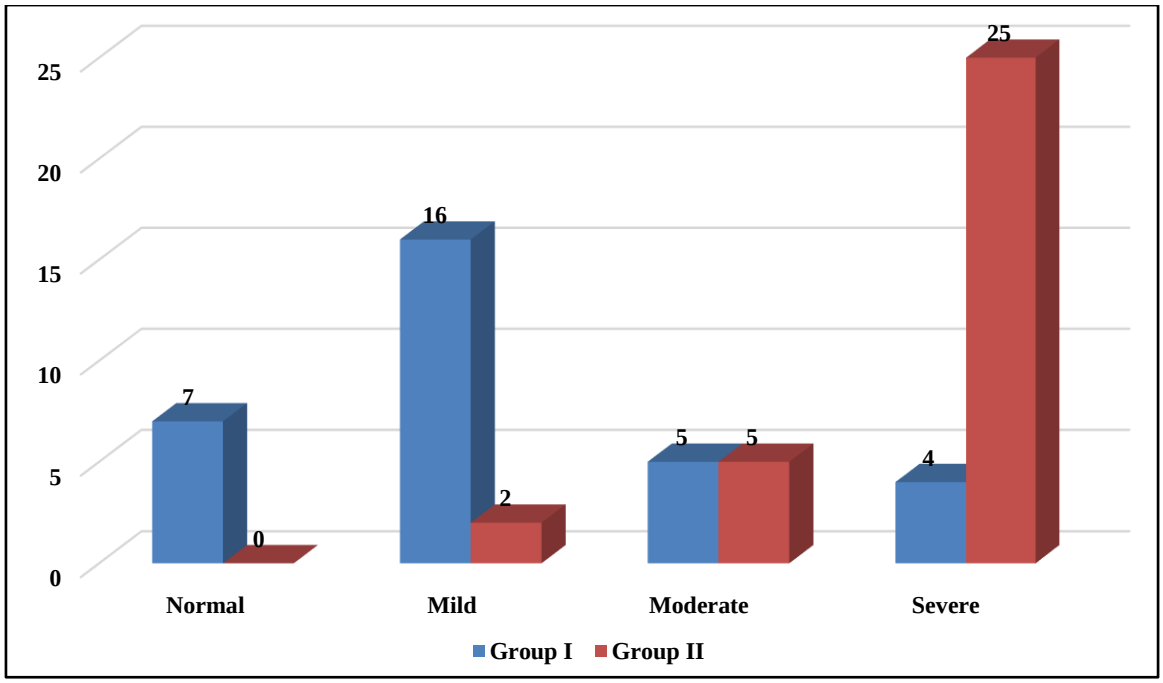
Table I: Assessment of parameters

Parameters	Group I	Group II	P value
Male	20	22	0.75
Female	12	10	
BMI (Kg/m^2)	21.6	18.2	0.02 (Significant)
6MWTD (m)	480.6	332.6	0.05 (Significant)

Table II: Functional pulmonary testing

Ventilatory defect	Group I	Group II	P value
Normal	7	0	0.01 (Significant)
Mild	16	2	
Moderate	5	5	
Severe	4	25	

Graph I: Functional pulmonary testing



RESULTS

Table I shows that in group I, males were 20 and females were 12 and in group II, males were 22 and females were 10, BMI was 21.6 Kg/m^2 in group I and 18.2 Kg/m^2 in group II, 6 minutes' walk was 480.6 meters in group I and 332.6 meters in group II. The difference was significant (P< 0.05). Table II, graph I shows that ventilatory defect found to be normal in 7, mild in 16 and 2, moderate in 5 and 5 and severe in 4 and 25 in group I and group II respectively. The difference was significant (P< 0.05).

DISCUSSION

Mycobacterium Tuberculosis is the causative organism for developing tuberculosis throughout the world. It mainly infects the lungs but can also involve other parts of the body (extrapulmonary TB). The disease is spread when people who are infected with pulmonary TB expel bacteria into the air, for example by coughing, sneezing, singing and talking.[6] About 1/3rd of the world's population is infected with tuberculosis in its pulmonary or extrapulmonary forms, and over 9 million new cases of tuberculosis (TB) are reported annually. Treatment of drug-susceptible pulmonary TB is highly effective, with 85% (66 million cases) of reported cases estimated to have been successfully treated between 1995 and 2014.[7] However, up to half of pulmonary TB survivors have some form of persistent lung function defects despite bacteriological cure. Pulmonary function impairment ranging from minor defects to severe forms can increase the risk of mortality from respiratory cause.[8] Hence; the present study was undertaken with the aim of assessing post tubercular sequelae in cured TB patients.

In present study, in group I, males were 20 and females were 12 and in group II, males were 22 and females were 10, BMI was 21.6 Kg/m^2 in group I and 18.2 Kg/m^2 in group II, 6 minutes' walk was 480.6 meters in group I and 332.6 meters in group II. Naso et al[9] included patients who completed treatment within a period of 6 months (group I) and multidrug-resistant pulmonary tuberculosis patients who completed treatments of longer duration after the failure of the initial treatment (group II). We evaluated lung function by spirometry (Microlab ML 3500), the strength of respiratory muscles through the manovacuometry (MEP -maximal expiratory pressure and MIP -maximal inspiratory pressure) and the distance walked during the 6-min walk (6MWT). Twenty-seven patients were included, 12 of whom belonged to group II, multidrug-resistant tuberculosis (MDRTB). Severe combined respiratory disorder was the most prevalent problem in group II of MDRTB; it was present in 9 patients. The MDRTB group (group II) showed significantly lower values when compared to Group I in FVC (72.06±14.95 vs43.58±16.03% predicted), FEV1 (66.13±19.87 vs 33.08±15.64% predicted), MIP (68.40±22.78 vs 49.58±12.55 cmH2O), MEP (87.20±27.30 vs 59.08±12.23 cmH2O) and distance covered in6MWT (484.21±74.01 vs 334.75±104.07 m).

In the present study, we found that ventilatory defect found to be normal in 7, mild in 16 and 2, moderate in 5 and 5 and severe in 4 and 25 in group I and group II respectively. According to guidelines for the treatment of tuberculosis, it is recommended that initial treatment be with the most effective medications and then alternative treatments used in cases of treatment failure. In Brazil, mainly due to higher rates of treatment noncompliance, the number of failures causing multi resistance to drugs is approximately1.5% of treatment outcomes triggering a major public health problem.[10]

The pathophysiological changes of pulmonary tuberculosis found in patients who underwent repeated treatments can cause systemic changes through motor disabilities brought on by physical deconditioning.[11] Another study concluded that TB causes chronic air-flow limitation, and when it is repeated, this limitation gets worse. It would appear that the mixed disorder is the one most frequently found in patients with multidrug-resistant tuberculosis.[12]

CONCLUSION

Authors found that patients with multidrug-resistant pulmonary tuberculosis who have undergone multiple treatments have more severe respiratory and functional impairment than patients who have had just a single treatment.

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