

# Pulmonary Tuberculosis in Elderly - Peculiarities and Dissimilarities: A Geriatric Clinic Experience

Sandhyarani Moharana<sup>1</sup>, M Lipika<sup>2</sup>, Dharendra Nath Moharana<sup>3</sup>, Subhransu Sekhar Pattnaik<sup>4</sup>, Santanu Padhy<sup>5</sup>, Tapan Kumar Sahoo<sup>6</sup>

<sup>1</sup>Associate Professor, Department of Physiology, Shrirama Chandra Bhanj Medical College, Cuttack, Odisha, India, <sup>2</sup>Senior Resident, Department of Obstetrics and Gynaecology, Shrirama Chandra Bhanja Medical College, Cuttack, Odisha, India, <sup>3</sup>Profesor, Department of Medicine, Pandit Raghunath Murmu Medical College, Baripada, Odisha, India, <sup>4</sup>MD, Department of Skin and VD, Shrirama Chandra Bhanja Medical College, Cuttack, Odisha, India, <sup>5</sup>Junior Resident, Department of Community Medicine, Shrirama Chandra Bhanja Medical College, Cuttack, Odisha, India, <sup>6</sup>Consultant, Department of Radiation Oncology, Junior Consultant in Department of Radiation Oncology, HCG Panda Curie Cancer Hospital, Cuttack, Odisha, India

## Abstract

**Introduction:** Pulmonary tuberculosis (TB) is caused by the organism's mycobacterium TB complex, the most widespread and serious of all human infections, still a major infectious disease worldwide. Despite the implementation of strong TB initiatives, this highly infectious disease continues to affect all vulnerable populations, including the elderly population.

**Aim of the Study:** The aim of this study is to find out the difference in manifestation of pulmonary TB in between adults and geriatric population.

**Material and Methods:** A total of 50 patients in the age group of 18-59 years and 56 patients aged 60 years or above who were diagnosed to have and treated for pulmonary TB were prospectively studied during the period December 2014 to November 2015.

**Results:** Majority patients were male in both adult and geriatric arms. Cough, dyspnea, chest pain, night sweats, and nonspecific presentations seen more in geriatric group of the patients in comparison to adult patients. Sputum smear examination showed positive in 29/56 geriatric patients and 31/50 adult patients aged 18-59 years. In geriatric group, out of 56 pulmonary TB patients, 18 cases detected in upper lobe and 19 cases found in lower lobe lung, whereas, in adult group, out of 50 pulmonary TB patients, 24 cases detected in upper lobe and only 2 cases detected in lower lobe lung. Among geriatric patients, a significantly less proportion of patients were cured compared to adults aged 18-59 years (38/56 versus 46/50;  $P = 0.019$ ).

**Conclusion:** TB in geriatric population is a bigger problem with regards to its presentation and treatment. Lower lobe TB is more common in the elderly population and there are more chances of multidrug resistance TB in the geriatric population.

**Key words:** Elderly, Geriatric, Pulmonary, Tuberculosis

## INTRODUCTION

Pulmonary tuberculosis (TB) may cause no or mild signs and symptoms in contrast to the prolonged disease course that is common in post-primary or adult type disease. Atypical clinical manifestations of TB in older persons can result in delay in diagnosis and initiation of treatment;

higher rates of morbidity and mortality from this treatable infection can occur. Underlying illnesses, age-related diminution in immune function, the increased frequency of adverse drug reactions, and institutionalization can complicate the overall outcome in elderly patients with TB. A high index of suspicion for TB in this vulnerable population is, thus, undoubtedly justifiable.<sup>1</sup> Acute or chronic diseases, malnutrition, and the biological changes associated with aging can disrupt protective barriers, impair microbial clearance mechanisms, and contribute to the expected age-related diminution in cellular immune responses to Mycobacterium TB.<sup>2</sup> The diagnosis of TB can be difficult, and this treatable infection is sometimes documented only on post-mortem examination. In addition, therapy for TB in elderly individuals is challenging

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**Corresponding Author:** Dharendra Nath Moharana, Department of Medicine, Pandit Raghunath Murmu Medical College, Baripada - 757 107, Odisha, India. Phone: +91-9437228479. E-mail: dhirendranath2512@gmail.com

because of the increased incidence of adverse drug reactions. Furthermore, institutionalized elderly persons are at high risk for reactivation of latent TB and are susceptible to new TB infection.<sup>2</sup>

## MATERIALS AND METHODS

During the period December 2014 to November 2015, 50 patients in the age group of 18-59 years and 56 patients aged 60 years or above who were diagnosed to have and treated for pulmonary TB in medical outpatient service and medical ward at Srirama Chandra Bhanja Medical College Hospital, Cuttack, Odisha were prospectively studied. In all of them, a detailed history was obtained and physical examination was done. The clinical, bacteriological, radiographic presentation of pulmonary TB, and treatment outcome were compared in both the groups.

All of them underwent the laboratory tests such as sputum smear examination for acid-fast bacilli, blood urea and serum creatinine, fasting and post-prandial blood sugar, liver function tests, urinalysis, chest radiograph (posteroanterior view), 12 lead electrocardiogram, Mantoux test (5 tuberculin units), and serological testing for test for human immunodeficiency virus. All patients received thrice-weekly intermittent directly observed treatment strategy treatment as per Revised National Tuberculosis Control Programme (RNTCP) guidelines. Treatment outcomes were recorded as per RNTCP guidelines.

### Aim and Objective

The aim of this study is to find out the difference in manifestation of pulmonary TB in between adults and geriatric population.

### Statistical Analysis

Continuous variables are summarized as mean  $\pm$  standard deviation. Categorical variables are summarized as percentages.

## RESULTS

We observed that the gender distribution was similar in adults aged 18-59 years (male:female = 32:18) and geriatric (male:female = 40:16) patients. In the geriatric group, 33 (59%) patients were in age group 60-65 years, 15 (26%) were in the age group 65-70 years, and the remaining 8 (14%) were aged over 70 years. In the 18-59-year-old adults, 12 (24%) patients were aged 18-30 years, 23 (46%) were in the age group 31-45 years, and the remaining 15 (30%) were aged 45-59 years. Salient presenting symptoms are shown in Table 1. In comparison to adults, aged 18-59 years, cough, dyspnea, chest pain, night sweats,

and non-specific symptoms were more frequently seen in geriatric patients.

In geriatric patients, malnutrition (64%), followed by anemia (30%), hypertension (HT) (24%), chronic obstructive pulmonary disease (COPD) (18%), diabetes mellitus (DM) (14%), and renal dysfunction (6%) were the comorbid conditions. In the 18-59-year-old adults, patients' malnutrition was seen in 60% patients, followed by anemia (42%), DM (8%), COPD (6%), and HT (6%). There was no statistically significant difference in sputum smear positivity and grading between geriatric patients and adults aged 18-59 years (Table 2).

On radiological examination, geriatric patients had a statistically significant higher occurrence of lower lobe infiltrates ( $P = 0.005$ ) compared with adults aged 18-59 years; all other radiological findings were comparable (Table 3).

Among geriatric patients, a significantly less proportion of patients were cured compared to adults aged 18-59 years

**Table 1: Presenting symptoms**

| Symptoms              | $\geq 60$ years (n=56) | 18-59 years (n=50) | P value |
|-----------------------|------------------------|--------------------|---------|
| Cough                 | 44                     | 33                 | >0.05   |
| Dyspnea               | 33                     | 9                  | >0.05   |
| Hemoptysis            | 19                     | 21                 | >0.05   |
| Chest pain            | 25                     | 7                  | >0.05   |
| Fever                 | 35                     | 35                 | >0.05   |
| Night sweats          | 40                     | 35                 | >0.05   |
| Non-specific symptoms | 33                     | 11                 |         |

**Table 2: Sputum smear examination**

| Sputum grading | $\geq 60$ years (n=56) | 18-59 years (n=50) | P value |
|----------------|------------------------|--------------------|---------|
| Sputum         |                        |                    |         |
| Positive       | 29                     | 31                 | 0.838   |
| Negative       | 21                     | 16                 |         |
| Scanty         | 6                      | 3                  |         |
| Grading        |                        |                    |         |
| 3+             | 11                     | 12                 | >0.99   |
| 2+             | 8                      | 10                 |         |
| 1+             | 10                     | 9                  |         |

**Table 3: Radiological findings**

| Type of lung lesion    | $\geq 60$ years (n=56) | 18-59 years (n=50) | P value |
|------------------------|------------------------|--------------------|---------|
| Upper lobe             | 18                     | 24                 | 0.311   |
| Lower lobe             | 19                     | 2                  | 0.005   |
| Middle lobe            | 9                      | 5                  | 0.712   |
| Unilateral infiltrates | 12                     | 8                  | 0.773   |
| Bilateral infiltrates  | 9                      | 5                  | 0.712   |
| Cavities               | 9                      | 8                  | 0.201   |
| Miliary pattern        | 7                      | 2                  | >0.99   |

(38/56 versus 46/50;  $P = 0.019$ ); treatment failure and death were comparable between the groups (Table 4). Side effects of anti-TB treatment in the geriatric patients and in the adults 18-59 year age group are highlighted in the Table 5.

The drug resistance profile was studied after completion of 2 months of antitubercular therapy. The suspicion of drug resistance was suspected depending on the clinical status, radiological status, and overall wellbeing of the patient. Anybody not showing satisfactory progress was subjected to drug sensitivity trial. Multidrug resistance (MDR) status (resistance to rifampicin and isoniazid) and extended drug resistance (XDR) pattern (resistance to rifampicin, isoniazid, and aminoglycosides and few other second-line drugs) were categorized and put in tabulated forms (Table 6).

## DISCUSSION

In the present study, male patients predominated in both the geriatric (72%) and 18-59 year old (60%) adults. Similar findings were reported in other studies, where the proportion of male patients ranged from 61-67.6%.<sup>3-5</sup>

In the present study, in comparison to 18-59-year-old adult patients, geriatric patients had a higher occurrence of cough, dyspnea, chest pain, night sweats, and non-specific

symptom. In other studies, cough, fever, chest pain, and night sweats were more frequently described in adults aged 18-59 years compared to geriatric patients,<sup>5-7</sup> but the difference was not statistically significant.

In our study, lower lobe involvement was more often seen in geriatric patients compared with adults aged 18-59 years (statistically significant). Atypical presentation observed in the geriatric patients in our study is consistent with the results reported in other studies.<sup>6-9</sup> Such atypical presentation may delay the diagnosis of pulmonary TB in geriatric patients. Similar observations were reported in other published studies.<sup>1,8,10-18</sup>

Sputum smear examination in the present study showed no significant difference in the geriatric and 18-59-year-old adult patients. This observation is similar to that documented in other studies.<sup>6,9,19</sup> Thus, our observations suggest that sputum smear examination is a simple useful tool for the diagnosis of pulmonary TB in the geriatric population.

In the present study, comorbidities such as HT, COPD, and DM were more often reported in the geriatric patients compared with adults aged 18-59 years. These findings are in concurrence with the reports from other studies.<sup>4,6,19-21</sup>

Outcome of treatment in the present study was poor in the geriatric patients compared to adult patients in our study. These findings are in comparison with observation documented in another study.<sup>22</sup>

The adverse drug reactions observed in the study were mild and transient. The most common adverse event in the study was gastrointestinal discomfort which was higher in the geriatric age group compared to the adult group. In other studies also, gastrointestinal discomfort was the most common adverse event.<sup>9,19</sup> In the present study, skin rash, ocular symptoms, arthritis, liver, and renal function abnormalities were higher in the geriatric patients compared to adult patients. These findings are in accordance with observations in other studies.<sup>9,19</sup>

Adherence to TB treatment can be particularly challenging the duration of treatment in long, combination therapy is required, and side effects may be unpleasant. Furthermore, patients often experience rapid improvement in symptoms, which may obfuscate the importance of continuing prolonged treatment with drugs that may be perceived as unnecessary.<sup>23</sup>

## CONCLUSION

Family support, including financial assistance, collecting medication, and emotional support, appeared to be a strong

**Table 4: Treatment outcome**

| Outcome   | ≥60 years (n=56) | 18-59 years (n=50) | P value |
|-----------|------------------|--------------------|---------|
| Cured     | 38               | 46                 | >0.05   |
| Not cured | 18               | 4                  |         |
| Failure   | 14               | 3                  | >0.05   |
| Died      | 8                | 1                  | >0.05   |

**Table 5: Adverse drug reactions**

| Adverse effects       | ≥60 years (n=56) (%) | 18-59 years (n=50) (%) |
|-----------------------|----------------------|------------------------|
| GIT symptoms          | 7 (12.6)             | 2 (4)                  |
| Liver dysfunction     | 3 (5.4)              | 2 (4)                  |
| Renal dysfunction     | 4 (7.2)              | 1 (2)                  |
| Skin rash             | 1 (1.8)              | 0                      |
| Ocular symptoms       | 2 (3.6)              | 0                      |
| Arthritis             | 1 (1.8)              | 0                      |
| Neurological symptoms | 1 (1.8)              | 0                      |
| Psychiatric           | 1 (1.8)              | 0                      |
| Others                | 0                    | 0                      |

**Table 6: Drug resistance profile**

| Type of resistance status | ≥60 years (n=56) |        | 18-59 years (n=50) |        |
|---------------------------|------------------|--------|--------------------|--------|
|                           | Male             | Female | Male               | Female |
| MDR                       | 4                | 3      | 1                  | 1      |
| XDR                       | 1                | 1      | 1                  | 0      |

MDR: Multidrug resistance, XDR: Extended drug resistance

influence on patient adherence to treatment. Further, there is a possibility of MDR-TB as a result of reinfection with a drug-resistant strain of TB. The drug sensitivity tests should be done at the RNTCP center and such center should be made widely available. TB in geriatric population is a bigger problem with regards to its presentation and treatment. Lower lobe TB is more common in the elderly population, and there are more chances of MDR-TB in the geriatric population. Hence, it is necessary to keep our elderly away from TB infection.

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