

OUTCOME OF PATIENTS PRESENTING AS SPUTUM AFB SMEAR NEGATIVE AND X-RAY CHEST LESION IN A TERTIARY CARE CENTRE

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ABSTRACT

When a patient present with pulmonary symptoms and sputum smear for AFB is negative with X-ray chest lesions, the chance of pulmonary tuberculosis is very high in our setting. But it can be other conditions like Pneumonia, malignancy, Bronchiectasis etc. So understanding the outcome of a patient presenting as sputum AFB negative with radiological lesions in a tertiary care centre is important for early diagnosis and treatment of different conditions including smear negative pulmonary tuberculosis. **Primary Objective:** To find out the outcome of sputum AFB smear negative patients presenting with pulmonary symptoms and radiological lesions. **Secondary objective:**

What is the proportion of patients presenting as pulmonary tuberculosis and its radiological features. **Study design:** Prospective study. **Study Setting:** Department of Pulmonary medicine, Govt. Medical College, Trivandrum. **Methodology:** A total of 398 patients were subjected for detailed investigations and grouped into different conditions like Pneumonia, malignancy, Bronchiectasis etc. The undiagnosed cases after initial evaluation were subjected for cat I ATT and the response is observed. In addition to the undiagnosed cases, those patients excluded from the study and death occurred during the study period were also calculated and the total outcome is measured. **Conclusion:** Out of 398 patients, 162 (40.70%) were pulmonary tuberculosis cases between the age group of 45-75 years. The next most common conditions were Pneumonia 79 (19.85%), malignancy 74 (18.59%) and Bronchiectasis 26(6.53%). This is followed by Lung abscess 12(3.02%) and ILD 5(1.26%).

15 (3.77%) were having other diagnosis which includes sarcoidosis, Wegner's and Pneumoconiosis.

KEYWORDS: Outcome, Smear negative radiological lesion, tertiary care centre.

INTRODUCTION

When a patient presents with pulmonary symptoms and sputum smear for AFB is negative with X-ray chest lesions, the chance of pulmonary tuberculosis is very high in our setting. If the sputum AFB is positive the diagnosis is easy. If it is negative this patient should be subjected for detailed investigations to make a correct diagnosis. Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*, which may affect the lung, but it can also affect other parts of the body. It is the most common cause of death due to a single infectious agent in adults and accounts for over a quarter of the avoidable death worldwide.^[1] It is a leading cause of death among women of reproductive age, surpassing all causes of maternal mortality.^[2] About one third of the global population is infected with *Mycobacterium tuberculosis* and every year there are 8 million new cases of tuberculosis and nearly 3 million deaths due to tuberculosis.^[3,4] In March 1993, WHO declared tuberculosis as a global emergency.^[5] Hippocrates describes tuberculosis as an almost always fatal disease of lung.^[6,7] *Mycobacterium* has been demonstrated microscopically in a mummy of a child of about 5 years of age.⁸ In March 24th of 1882 Robert Koch announced the discovery of tubercle bacilli and published a paper "Reports of the Imperial Health Office".^[9] In 1905 he was awarded a Nobel prize for his contribution in the field of tuberculosis research.^[10]

So understanding the outcome of a patient presenting as Sputum AFB smear negative and radiological lesions in a tertiary care centre is important for early diagnosis and treatment of different conditions including smear negative pulmonary tuberculosis.^[11,12]

AIM AND OBJECTIVES

Primary objective: To find out the outcome of sputum AFB smear negative patients presenting with pulmonary symptoms and radiological lesions.

Secondary Objective

What is the proportion of patients presenting as Pulmonary Tuberculosis and its radiological features.

MATERIALS AND METHODS

Study Design: Prospective study.

Study period: June 2001 to September 2003.

Study setting: Department of pulmonary Medicine, Govt. Medical College, Thiruvananthapuram.

Study population: All patients presenting with fever, cough, hemoptysis, chest pain, loss of weight, loss of appetite and sputum smear AFB negative, with X-ray chest lesions attending the department of pulmonary medicine, Govt. Medical College, Thiruvananthapuram.

Inclusion Criteria

All patients during the study period with pulmonary symptoms like fever, cough, expectoration, hemoptysis etc in which the smear is negative for AFB and X-ray chest shows lesions were included in the study after obtaining informed consent.

Exclusion Criteria

Sputum AFB positive cases with X-ray lesions suggestive of pulmonary tuberculosis, history of previous ATT, pleural effusion etc.

The severity of X-ray chest lesions were categorized based on the ATS Guidelines for radiological extend of disease, into minimal lesions, moderately advanced and far advanced.

METHODS

This a prospective observational study conducted in the department of pulmonary medicine, Govt. Medical College, Thiruvananthapuram. All cases of smear negative, x- ray lesions were included in the study. All patients were subjected for detailed evaluation like blood and urine examination gram staining, sputum culture, sputum cytology, blood culture etc. All patients were started on broad spectrum antibiotic and observed. If there is clearance, it is diagnostic of community acquired pneumonia. If no response these patients were subjected for further investigations like Mantoux test, FNAC, CT/HRCT, US guided biopsy, CT guided biopsy, bronchoscopy etc. and other special investigations suitable for the clinical case. Based on the investigation, diagnosis was established (For eg. Pneumonia, malignancy, lung abscess, bronchiectasis etc.). All the other undiagnosed suspected smear negative pulmonary tuberculosis cases were subjected for category 1 ATT for 6 months and the outcome is assessed.

OBSERVATIONS AND RESULTS

The total number of patients with radiologic lesions included in this study were 398.

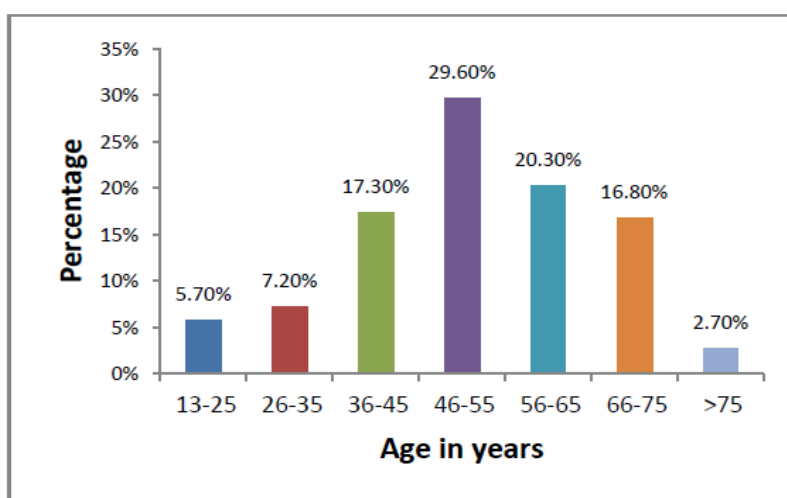
Sex distribution

Sex	Number	Percent
Male	306	76.8
Female	92	23.2
Total	398	100

Majority of patients belongs to male group.

Age distribution

Age in years	Number	Percent
13-25	23	5.7
26-35	29	7.2
36-45	69	17.3
46-55	118	29.6
56-65	81	20.3
66-75	67	16.8
>75	11	2.7
Total	398	100



Maximum patients were in the age group between 46 and 55 followed by the age group between 56 and 65. There are only 2.7% patients above the level of 75 years.

Outcome of total patients evaluated in the initial phase of the study.

Diagnosis	Number	Percent
Diagnosed cases	211	53%
Undiagnosed cases after initial evaluation	187	47%
Total	398	100%

Distribution of diagnosed cases

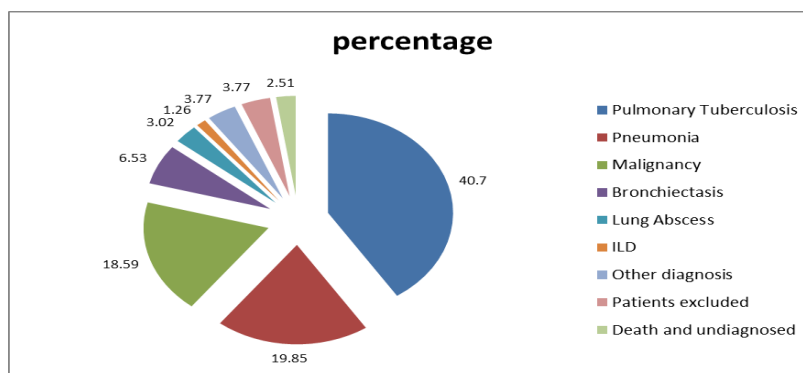
Diagnosis	Number	Percent
Pneumonia	79	19.85
Malignancy	74	18.59
Bronchiectasis	26	6.53
Lung abscess	12	3.02
ILD	5	1.26
Other diagnosis	15	3.77
Undiagnosed cases after initial evaluation	187	46.98
Total	398	100

Distribution of outcome of patients started on Cat 1 ATT

Patient group	Number	Percent
Responded to chemotherapy	162	86.6
Death and not responded	10	5.3
Discontinued	8	4.2
Lost follow up	7	3.7
Total	187	100

Distribution of total outcome

Patient group	Number	Percent
Pulmonary Tuberculosis	162	40.70
Pneumonia	79	19.85
Malignancy	74	18.59
Bronchiectasis	26	6.53
Lung Abscess	12	3.02
ILD	5	1.26
Other diagnosis	15	3.77
Patients excluded	15	3.77
Death and undiagnosed	10	2.51
Total	398	100

Distribution of Tuberculosis and other diagnosed cases in the study population

211 (53%) of patients were categorized into various diagnosis after initial evaluation. 162 (40.7%) responded to category 1 ATT. 15 (3.76%) excluded, 10 (2.51%) were in the death and undiagnosed group.

DISCUSSION

In this prospective study 398 patients were investigated in detail for diagnosis. Sex distribution includes 306 (76.8%) males and 92 (23.2%) females. Patients were distributed into 7 age groups with minimum age of 13 years and a maximum age >75 years. After initial evaluation and diagnosis, 211 (53%) of patients were categorized into different diagnosis. This includes Pneumonia 79 (19.8%), Malignancy 74 (18.5%), Bronchiectasis 26 (6.5%), Lung abscess 12 (3.0%), interstitial lung disease 5 (1.2%) and other diagnosis 15 (3.7%). Other diagnosis includes sarcoidosis, Wegner's, pneumoconiosis etc.

The undiagnosed 187 (47%) patients were started on Cat 1 ATT and continued for 6 months. Out of this, 162 (40.7%) patients responded to ATT and completely cured. 15 (3.7%) patients discontinued ATT and lost follow up. 8 patients died and 2 patients were remaining undiagnosed.

In the nontubercular diagnosis group pneumonia and malignancy were the two major group of conditions followed by Bronchiectasis. Out of 74 malignancy cases 64 (86.48%) were males and 10 (13.5%) were females. Regarding the method of diagnosis of malignancy FNAC/Excision biopsy in 33 (44.6%) patients. CT guided biopsy in 19 (25.6%) patients, Bronchoscopy in 13 (17.5%) patients and cytology in 9 (12.16%) patients. Feinsilver SH et al reported that approximately 8% of bronchoscopies were done specially to evaluate patient with non resolving pneumonia. But in our study out of 398 cases 74 were malignancies and 13(3.2%) patients were diagnosed via bronchoscopy.^[13]

Out of 162 diagnosed cases of tuberculosis, 129 (79.6%) were males and 33 (20.4%) were females and majority of patients belonged to age group between 46 and 75 years. In our study 71% of patients belong to this age group. Low immune status, associated smoking, diabetes mellitus and COPD may be the cause for this. The comorbidities include diabetes in 29 (17.9%) and COPD in 52 (32%) and risk factor like smoking in 113 (69.7%) patients.

Outcome of our study is almost similar to another study conducted in the department of pulmonary medicine, Govt. Medical College, Trivandrum in 2008 and published in JAPI 2012 which shows that tuberculosis was the common cause of non resolving pneumonia (35.7%). Age was above 40 years, comorbidities like diabetes, COPD and risk factors like smoking and alcoholism were the commonest cause in this study.^[14] Jaysa, Johnson WG et al

in his study showed that common conditions associated with delayed resolutions are advanced age COPD and alcoholism.^[15] Regarding the severity of radiological lesion in the tuberculosis group of our study includes minimum lesion in 33 (20.3%), moderately advanced in 78 (48.1%) and far advanced in 51 (31.4%) of patients.

In tuberculosis cases the zone of distribution of x- ray chest lesion was mainly in the upper zone but in diabetic patient it was mainly in the mid zone and lower zone. Regarding the clearance of radiological lesion 116 (72%) patients showed >50% clearance in 2 months followed by 149 (92%) >75% clearance in 4 months and 162 (100%) patients showed >90% clearance in 6 months.

In western literature, study conducted by Arancibia F, Ewigs et al in his study, Antimicrobial treatment failures in patients with community acquired pneumonia, causes and prognostic implications, showed a high mortality in non resolving pneumonia.^[16] But in our study out of 398 patients only 7 patients died which was a low percentage.

So the pulmonary Tuberculosis was the most common condition in a sputum AFB smear negative patients presenting with chest X-ray lesion in a tertiary care centre. This is followed by Pneumonia and malignancy.

CONCLUSION

Out of 162 tuberculosis cases, patients were between the age group of 46 to 75 years and male gender were at risk of Pulmonary tuberculosis. Comorbidities like diabetes mellitus, COPD and risk factors like smoking were also significant factors associated with this condition. So proportion of patients presenting as pulmonary tuberculosis in smear negative patients with radiological lesion in a tertiary care centre was 40.7%. The second most common condition was Pneumonia, that is 19.85% followed by malignancy in 18.59%. Other conditions include Bronchiectasis in 6.53%, Lung abscess in 3.02% and only 1.26% of patient presented as ILD in a tertiary care centre. Other diagnosis include sarcoidosis, Wegner's & pneumoconiosis.

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