ORIGINAL RESEARCH PAPER

Pulmonary Medicine

CLINICORADIOLOGICAL PROFILE OF PATIENTS PRESENTED WITH LOWER LUNG FIELD TUBERCULOSIS WITH DIABETES TO A TERTIARY CARE CENTER.

KEY WORDS:

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ABSTRACT

Objectives: The aim of this study was to determine clinical and radiological profile of lower lung field tuberculosis with diabetes presented to a tertiary care center. **Methods:** All the patients of lower lung field tuberculosis defined by as the area on the chest X-ray posteroanterior view , which extends below an imaginary horizontal line traced across the hilum includes the parahilar regions(1). That means lower lung field tuberculosis includes lower lobes , middle lobe on right side, lingula on left side and parahilar regions. The diagnosis of lower lung field tuberculosis was made by patient clincal history, sputum for Truenat examination , chest X-ray PA view. Diagnosis of diabetes mellitus was made according to WHO guidelines, that is fasting blood glucose level >126mg/dl (or) 2 hour blood glucose level >200mg/dl. Patients who were admitted in katuri medical college and hospital, chinakondrupadu, Guntur, over a period of 2 years. **Results:** This study included sample size of 40 patients with pulmonary tuberculosis with diabetes mellitus . Among them 24 were diagnosed as the case of lower lung field tuberculosis. Among 24 patients ,14 were females, and 10 were males. Lower lung field tuberculosis affected females more frequently than males. **Conclusion:** Lower lung field tuberculosis in our study mostly manifested as cavity. Consolidation and infiltration were next frequent findings on chest x ray. Right sided involvement on chest X-ray is the most common presentation. Cough is the most common symptom followed by fever and haemoptysis.

INTRODUCTION:

The risk of acquiring tuberculosis in a patient with diabetes mellitus is 4.8% compared to general population(2). Lower lung field tuberculosis also known as basal tuberculosis previously. If diabetics presented with lower lung lesions on chest X-ray possibility of tuberculosis should always be suspected for prompt diagnosis and management. Lower lung field tuberculosis may be confused with bronchiectasis/ bronchogenic carcinoma thus delaying the correct diagnosis. Lower lung field tuberculosis occur as continuum of primary tuberculosis (or) soon after post primary tuberculosis(1,3). Elderly patients with diabetes are particularly prone for this radiological pattern and oxygen tension variability preferably involving lower lobe is thought to be the reason for increased lower lung predilection(4). Most common symptoms are cough , fever and haemoptysis. Other clinical features are breathlessness, loss of appetite, weakness and malaise.

MATERIALS AND METHODS:

This study was conducted in katuri medical college and hospital, chinakondrupadu , Guntur, all the patients who visited the hospital with symptoms suggestive of pulmonary tuberculosis were undergone investigations for chest X-ray and sputum examination for diagnosis of mycobacterium tuberculosis by Truenat (RT-PCR). Diagnosis of diabetes mellitus was made according to WHO guidelines that is fasting blood glucose >126mg/dl (>7mmol/lit) or 2 hour blood glucose>200mg/dl (11.1mmol/lit). Study span is about 2 years.

Inclusion Criteria:

1. Patients above 18 years.
2. Sputum for mycobacterium tuberculosis positive on Truenat (RT-PCR)
3. Chest X ray PA view suggestive of pulmonary tuberculosis.
4. Known diabetic and recently diagnosed diabetics according to WHO guidelines.

Exclusion Criteria:

1. Pregnant women and age<18 years.
2. HIV seropositive individuals.
3. All other forms of extra pulmonary tuberculosis.
4. No pulmonary CT scans taken at diagnosis confirmation.

RESULTS:

There were 40 cases of pulmonary tuberculosis with diabetes mellitus, of which 24 (60%) had lower lung field tuberculosis based on chest X ray findings. All 40 cases of pulmonary tuberculosis were positive for sputum for truenat examination of mycobacterium tuberculosis. Out of 24 cases 58% (14) were females, 41% (10) were males affected with lower lung field tuberculosis. Most common presenting clinical feature was cough 20 (83%) with or without expectoration followed by fever 17 (70%) and haemoptysis 16 (66%). Chest X-ray show predominant finding in our study was cavity12 (50%) followed by consolidation 8 (33%) followed by infiltration (7.1%). Right sided involvement was seen in 18 (75%) individuals on chest X-ray in our study was more common.

Chest X-ray PA view showing cavity in right lower lung zone

Clinical Features Of Lower Lung Field Tuberculosis In Diabetics

Clinical features	Males	Females
Cough	8 (80%)	12 (85%)
Fever	6 (60%)	11 (78.5%)
Haemoptysis	6 (60%)	10 (71%)
Weight loss	4 (40%)	6 (42%)
Breathlessness	6 (60%)	10 (71%)
Other features	4 (40%)	6 (42%)

Radiological Pattern Of Lower Lung Field Tuberculosis In Diabetics

Chest X ray features	Males	Females
Cavitation	5 (50%)	7 (50%)
Cavity with consolidation	4 (40%)	4 (28%)
Consolidation	1 (10%)	1 (7.1%)
Infiltrates	0	1 (7.1%)
Other findings	0	1 (7.1%)
Right lower lung field	8 (80%)	10 (71%)

DISCUSSION

In our study lower lung field tuberculosis in diabetics mainly presented as cough, similar to other studies(1,5,7). The most common pathogenetic mechanism described for lower lung field tuberculosis is the ulceration of a bronchus by lymphnodal tuberculosis with spillage of material into bronchus. The ulceration might be the cause for cough and haemoptysis in our study. Diabetes can modify the radiological features of tuberculosis in type and location on the chest X-ray. Increased alveolar oxygen pressure in the lower lobes favours development of lower lobe disease in diabetics. Right side lung involvement is more common in our study. Cavitation was the most frequent finding on chest X-ray in our study. Other findings were cavity with consolidation , infiltrates, hilar lymphadenopathy. In our study females were effected more frequently than males may be due to tight clothing around their waists causes impaired movement of diaphragm and costal type of breathing, leads to decreased ventilation(5). Truenat is based on real time polymerase chain reaction method, it is a chip based nucleic acid amplification test in detection of mycobacterium tuberculosis. In truenat method 0.5 ml of single sample is required and results are available within in 1hour for MTB detection. The overall sensitivity and specificity of truenat are 97% and 98% .

CONCLUSION:

Diabetes mellitus affects the radiological pattern of pulmonary tuberculosis mainly. In our study atypical presentation in lower lung fields with pulmonary cavities was the most common pattern(6). Clinical features of lower lung field tuberculosis in diabetics was same as other pulmonary tuberculosis patients. Glycemic control and inflammation influenced radiographic manifestations in patients with diabetes mellitus. Hyperinflammation in peripheral blood was significantly associated with lung cavity. High bacterial load also give rise to more extensive lung lesions, cavitation and infiltration. Short course of antitubercular chemotherapy is an quite effective mode of treatment for lower lung field tuberculosis with good control of blood sugar level. The early diagnosis of lower lobe tuberculosis is important to prevent sequelae.

Limitations:

In our study bronchoscopy was not performed in all cases which may be considered important in lower lung tuberculosis. Hbalc was also not measured which is the measure of diabetes control, therefore we are not able to differentiate whether control diabetics have more chance of lower lung tuberculosis than non control diabetics.

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