ORIGINAL RESEARCH

Assessment of tuberculous lesion in association with diabetes mellitus patients

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ABSTRACT
Background: Tuberculosis (TB) is a contagious bacterial infection caused by Mycobacterium tuberculosis. The present study was conducted to assess tuberculous lesion in association with diabetes mellitus patients. **Materials & Methods:** 120 cases of respiratory diseases of both genders were selected. Group I patients had both tuberculosis with DM and group II patients were diagnosed with tuberculosis only. All were subjected to examinations such as chest x-rays, sputum examination for acid fast bacilli, bronchoscopy, etc. Assessment of diabetes mellitus was done following fasting blood glucose, random blood glucose and glycated hemoglobin level. **Results:** Out of 120 patients, males were 76 and females were 44. Age group 11-20 years had 2 and 5, 21-30 years had 8 and 9, 31-40 years had 5 and 12, 41-50 years had 8 and 13 and >50 years had 15 and 21 patients in group I and II respectively. The difference was significant (P< 0.05). Radiological findings in group I and group II patients was cavitary lesions in 3 and 7, infiltrative lesions in 12 and 24, exudative lesions in 6 and 10 and pleural effusion in 2 and 5 patients respectively. The difference was significant (P< 0.05). **Conclusion:** Early identification of diabetes mellitus in people with tuberculosis is likely to boost its detection. This will enable early detection of the coexistence of these two illnesses, allowing for the simultaneous application of the necessary treatments.
Key words: Diabetes Mellitus, Tuberculosis, Smoking

INTRODUCTION

Tuberculosis (TB) is a contagious bacterial infection caused by Mycobacterium tuberculosis. It primarily affects the lungs but can also affect other parts of the body, such as the kidneys, spine, and brain.[1] TB spreads through the air when an infected person coughs, sneezes, speaks, or sings, releasing tiny droplets containing the bacteria into the air.[2]

India is home to one-fourth of the 10.6 million annual tuberculosis (TB) cases that occur worldwide.[3] The twin burden of communicable and non-communicable illnesses is one of the biggest health challenges currently facing the world. This can be partially explained by common risk factors.[4] Despite the fact that HIV infection is the main risk factor for the development of TB infection, many other factors that disturb the immune system's homeostasis, such as diabetes mellitus (DM), alcoholism, smoking, cancer, steroid therapy, stress, malnutrition, and chronic renal failure, can result in active TB disease. There is ample evidence that TB and diabetes mellitus coexist in low- and middle-income countries.[5]

The prevalence of DM is likewise rising globally. Around 1.5 million individuals died in 2012 with DM and its complications, with underdeveloped nations having the greatest mortality rates. The prevalence of diabetes mellitus (DM) has increased in developing nations like India due to a sedentary lifestyle, increased rice consumption, urbanisation, and ageing. According to studies from various contexts, between 12% and 44% of TB diagnoses also have diabetes, and DM triples the chance of developing active TB disease.[6] As a result of impaired cell-mediated immunity, active TB disease and high relapse rates are hypothesised to be the cause of this.[7] Vascular problems, an increase in basal membrane thickness, a decrease in lung elasticity, and neuropathy are signs of lung injury in diabetes mellitus.[8] The present study was conducted to assess tuberculous lesion in association with diabetes mellitus patients.

MATERIALS & METHODS

The present study consisted of 120 cases of respiratory diseases of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. History, signs and symptoms (such as fever, cough, expectoration, weight loss, lack of appetite, exhaustion, etc.) were recorded. Patients were divided into 2 groups. Group I patients had both tuberculosis with DM and group II patients were diagnosed with tuberculosis only. All were subjected to examinations such as chest x-rays, sputum examination for acid fast bacilli, bronchoscopy, etc. Assessment of diabetes mellitus was done following fasting blood glucose, random blood glucose and glycated hemoglobin level. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 120		
Gender	**Male**	**Female**
Number	76	44

Table I shows that out of 120 patients, males were 76 and females were 44.

Table II Age wise distribution

| Age groups (years)	Group I	Group II	P value
11-20	2	5	0.05
21-30	8	9	
31-40	5	12	
41-50	8	13	
>50	15	21	
Total	48	72	

Table II shows that age group 11-20 years had 2 and 5, 21-30 years had 8 and 9, 31-40 years had 5 and 12, 41-50 years had 8 and 13 and >50 years had 15 and 21 patients in group I and II respectively. The difference was significant (P< 0.05).

Table III Radiological findings

Radiological findings	Group I	Group II	P value
Cavitatory lesions	3	7	0.04
Infiltrative lesions	12	24	0.05
Exudative lesions	6	10	0.04
Pleural effusion	2	5	0.03

Table III, graph I shows that radiological findings in group I and group II patients was cavitatory lesions in 3 and 7, infiltrative lesions in 12 and 24, exudative lesions in 6 and 10 and pleural effusion in 2 and 5 respectively. The difference was significant (P< 0.05).

Graph I Radiological findings
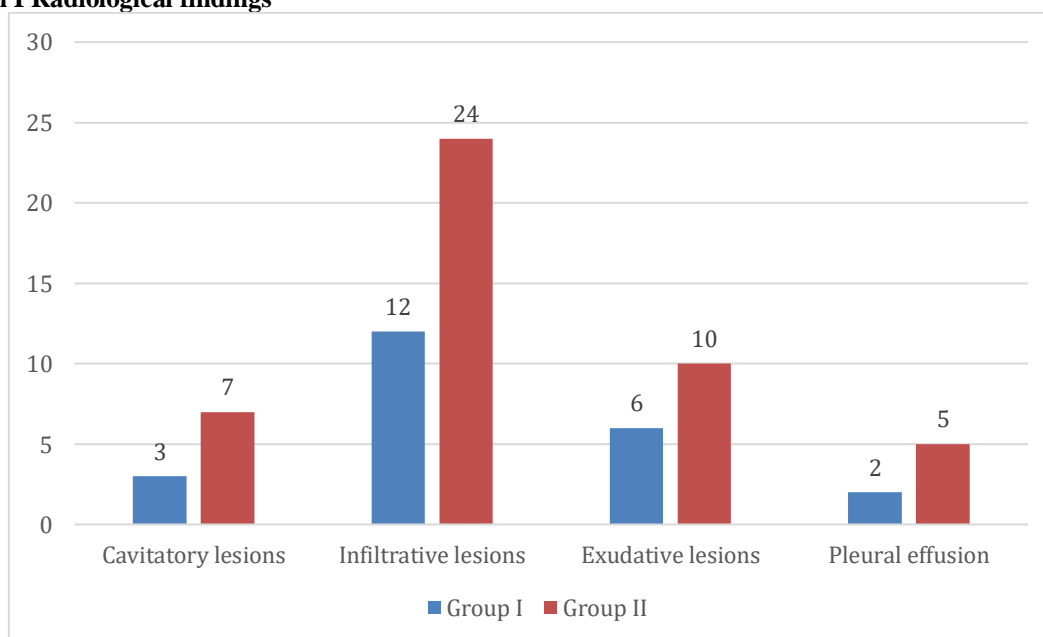
DISCUSSION

The two main illnesses that are very common in India are tuberculosis and diabetes mellitus. The combination of these two disorders has increased the likelihood of protracted therapy, recurrence, and death.[9,10] For India and other developing nations that bear a significant worldwide burden of these two diseases, the TB-DM epidemic is a challenge.[11] More than 95% of all tuberculosis-related deaths globally take place in nations with low and moderate levels of income.[12] While the African continent alone reported more than 3,90,000 deaths connected to this disease in the year 2009, India records more than two lakh deaths from tuberculosis each year.[13] The present study was conducted to assess tuberculous lesion in association with diabetes mellitus patients.

We found that out of 120 patients, males were 76 and females were 44. Singh et al[14] analyzed 1000 consecutively admitted patients for the coexistence of tuberculosis and diabetes Mellitus. The study found that a significant proportion of diabetic patients had coexistent tuberculosis (65.5%). Rural population was predominantly affected in both the genders. The study observed that the coexistence of these two conditions increased with advanced age.

We found that age group 11-20 years had 2 and 5, 21-30 years had 8 and 9, 31-40 years had 5 and 12, 41-50 years had 8 and 13 and >50 years had 15 and 21 patients in group I and II respectively. We found that radiological findings in group I and group II patients was cavitatory lesions in 3 and 7, infiltrative lesions in 12 and 24, exudative lesions in 6 and 10 and pleural effusion in 2 and 5 respectively. Rajaa et al[15] assessed the prevalence and determinants of diabetes mellitus (DM) among tuberculosis (TB) patients and to assess the additional yield and number needed to screen (NNS) to obtain a newly diagnosed DM among TB patients. 1188 TB patients were included. In individuals with TB, the prevalence of DM was 39%. Older TB, marital status, caste, gender, higher education level, household income, and obesity all significantly correlated with DM in unadjusted analyses. However, in adjusted analysis, only body mass index category, overweight and obesity aPR and marital status, widowed/separated/divorced patients had to be screened in order to detect a new DM case.

Munoz et al[15] assessed the outcomes of patients registered for anti-tuberculosis treatment and to identify factors associated with poor treatment outcome. A total of 6547 patients (55.6% men, 44.4% women) with a mean age of 27.5 years were registered for treatment; 1157 (17.7%) had extra-pulmonary TB, 2873 (43.9%) had positive smear results, and 2493 (30.1%) had negative results. The majority (n = 6033, 92%) were brand-new instances; 4900 (74.8%) had a successful treatment outcome, whereas 1095 (16.7%) did not. 667 (60.9%) individuals defaulted on their therapy, 404 (36.9%) died, and 24 (2.2%) failed treatment out of those who had a poor outcome. Attending a regional capital health centre (aOR 2.09, 95% CI 1.85-2.69), being on retreatment (aOR 2.07, 95% CI 1.47-2.92), having a positive smear at the second month follow-up (aOR 1.68, 95% CI 1.07-2.63), having smear-negative pulmonary TB (aOR 1.62, 95% CI 1.4-1.86), being older than 55 years.

The limitation the study is small sample size.

CONCLUSION

Authors found that early identification of diabetes mellitus in people with tuberculosis is likely to boost its detection. This will enable early detection of the coexistence of these two illnesses, allowing for the simultaneous application of the necessary treatments.

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