ORIGINAL ARTICLE

Prevalence of Tuberculosis in Diabetic Patients

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ABSTRACT

Aim: To determine the frequency of tuberculosis in the patients of diabetes.
Study design: Cross-Sectional
Place and duration of study: Department of Pulmonology, Avicenna Medical College, Lahore from 1st March 2020 to 31st August 2020.
Methodology: Two hundred patients of both genders were presented in this study. Patients detailed demographics age, sex and body mass index were recorded after taking proper consent. Patients admitted in outpatient department with diabetic duration greater than 5years. The different variants of pulmonary and extra pulmonary tuberculosis were measured.
Results: There were 120(60%) males and 80(40%) were females with mean age was 51.8±18.22 years. The mean duration of diabetes was 11.5±9.19 years. 60% patients were addicted to gutka and smoking. Active tuberculosis was only found in 30(15%) cases. Pulmonary tuberculosis were 17(56.7%) and the rest 13(43.3%) were extra pulmonary tuberculosis. Eighteen (60%) patients had smear positive and 12(40%) had smear -ve TB.
Conclusion: The frequency of tuberculosis in the diabetic patients was high as compared to other population. It can be cure by early diagnosed of disease otherwise multidrug-resistant tuberculosis can become serious health problem among public.
Key words: Prevalence, Tuberculosis, Diabetic patient, Multidrug-resistant tuberculosis

INTRODUCTION

It is prudent to assume that the mother of all diseases is diabetes. Diabetic patients are more likely to develop notorious tuberculosis (TB) disease than the general population due to immunomodulation and compromised immunity.[1,2] Despite all preventive steps, diabetes is increasing globally, according to WHO. Approximately 9.5% of the urban and rural population in Pakistan[3] suffers from this disease and WHO ranks seventh in prevalence.[4]

There is a clear correlation between tuberculosis and diabetes, and TB sufferers have also been indicated to be more vulnerable to diabetes mellitus.[5] There are currently about 1.5 million TB patients in Pakistan, while 0.25 million new people develop the disease per year.[6] According to several studies and surveys, the prevalence of TB developing diabetics is 15-20% in Pakistan, which is deficiency. The goal of this study was to see the different variants of TB that affect our diabetic population compared to non-diabetics[7].

The significance of several risk factors for tuberculosis and the profile of comorbidities and clinical issues for people with tuberculosis are changing as the burden of non-communicable diseases and ageing populations increase[8] Early detection and timely surveillance of diabetes mellitus and tuberculosis are critical. However, early detection of diseases is less frequent in developing countries. The symptoms of a complex disease are masked by the disease that was initially present. The prognosis and clinical course of one of the two conditions adversely affects the other[9].

Many experts have raised concerns about the relationship and merger of tuberculosis and diabetes mellitus (DM) epidemics in populations with low socio-economic status[10]. Low-income countries, such as those in Ethiopia, face the double burden of an unprecedented rise in the prevalence of DM and the world's highest burden of TB. The future association between the two diseases will further complicate the problem and pose specific concerns[11,12].

Several studies have shown that DM increases the risk of TB and that higher DM values are seen in patients with TB[13,14] Diabetes triples the risk of tuberculosis and is also a risk factor for the effects of treatment with adverse tuberculosis, including death[15]. In people living with DM, these risks are known to escalate, particularly if their blood glucose levels are elevated[16,17].

MATERIALS AND METHODS

The research was conducted in Department of Pulmonology, Avicenna Medical College, Lahore from 1st March 2020 to 31st August 2020 and comprised 200 patients. Patients detailed demographics age, sex and BMI was recorded after taking written consent. Patients with short duration of diabetes, age less than 10 years and those were not agreed was excluded from this study. Patients admitted to the outpatient department for diabetic patients longer than 5 years. For 3 samples for DR/AFB and X-ray Chest PA view, blood CBC was registered with ESR, HbA1C, FBS and sputum. In positive patients, the length of diabetes with control levels and onset of tuberculosis was noted and the type of TB was defined on

the basis of site of involvement and radiology. Complete data was analyzed by SPSS version 24.

RESULTS

Majority of males 120 (60%) and the frequency of females were 80 (40%). Mean age of the presented patients were 51.8±18.22years with mean BMI 23.12±9.28kg/m^2. Mean duration of diabetes were 11.5±9.19 years. Active tuberculosis was only found in 30 (15%) cases (Table 1). Out of 30 (15%) patients of active tuberculosis, frequency of pulmonary tuberculosis were 17 (56.7%) and the rest 13 (43.3%) were extra pulmonary tuberculosis. In pulmonary TB 4(13.4%) cases had primary, 5 (16.7%) cases had post primary, 2 (6.7%) patient had milliary, MDR TB was in 6 [20%] (Table 2). In patients of active tuberculosis, 18 (60%) patients had smear positive and 12 (40%) had smear negative TB (Table 3).

Table 1: Baseline detailed demographics of enrolled patients

Variable	No.	%
Gender		
Male	120	60.0
Female	80	40.0
Active TB	30	15.0
Mean Age(Yrs)	51.8±18.22	
Mean BMI	23.12±9.28	
Mean duration DM(Yrs)	11.5±9.19	

Table 2: Distribution of active TB among patients (n=30)

Type of TB	No.	%
Primary TB	4	13.4
Post Primary TB	5	16.7
Milliary TB	2	6.7
MDR-TB	6	20.0
Extra Pulmonary	13	43.3

Table 3: Frequency of smear positive among diabetics TB patients (n=30)

Smear	No.	%
Positive	18	60.0
Negative	12	40.0

DISCUSSION

The frequency of active tuberculosis was found in only 30 (15%) cases and the result was comparable to the previous study conducted by Naqviet al.[18] In the medical community, there is a popular old saying that diabetes is the mother of all illnesses. Tuberculosis is one of the most common infectious diseases acquired by the diabetic population due to immunomodulation and other variables. There is a linear association with Myco-tuberculosis as the amount of type 2 diabetes has raised globally.[19]

The incidence found in this study is 15 %, which is a high figure compared to the non-diabetic population who had 2.6 % in 2017, and this confirms the study conducted in their review article in 2017 by Workneh and coworkers who registered 13 % diabetic tuberculosis in Pakistan.[20] The other predisposing factors found in this study are high addiction rate and BCG vaccination status Many studies highly support these causes. These factors are highly supported by many studies specially one done by Siddiquiet al.[21]

The incidence of pulmonary TB was 56.7% among active tuberculosis and the remaining 13 were extra pulmonary TB 43.3%. This means extra-pulmonary TB is more prevalent in diabetics than in non-diabetics, even though pulmonary TB is more prevalent. Pulmonary tuberculosis habits are roughly the same as in non-diabetics, e.g. apical and upper lobes are more commonly involved. The best place for extra-pulmonary TB is in comparison with non-diabetics, accompanied in this study by renal and disseminated TB, while mediastinal TB, Lymph nodes and vertebras are common sites followed by intestinal, meningitis, and adrenal gland.[22]

In diabetics, the prevalence of smear-positive TB was found to be 60% compared with non-diabetics, where 8-10% was found in most studies. In this study among diabetics, multidrug-resistant TB was found to be 20% compared to non-diabetics in most studies, 11.3%.[23,24] The incidence of tuberculosis is very high for diabetes and extra-pulmonary TB is also high for non-diabetics. The upper and apical lobes are frequent sites of post-primary tuberculosis involvement. The most common place for extrapulmonary tuberculosis is intestinal tuberculosis. Among diabetics, MDR-TB is very high, and if extensive steps are not taken promptly now, this will in the future become a raging public health concern.

CONCLUSION

The frequency of tuberculosis in the diabetic patients was high as compared to other population. It can be cure by early diagnosed of disease otherwise MDR-TB can become serious health problem among public.

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