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Diabetes and Tuberculosis: The Study of Clinical-radiological Profile in Tertiary Care Hospital

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Abstract
Background - *DM is a well known risk factor for TB in the past [1,2.] Patient with diabetes mellitus type-2 are in particular more prone to getting into infections, including TB, which are more difficult to treat because of their inherent weak immune system, the high prevalence of diabetes could adversely affect global TB control effort [3,4]. Historically, the incidence of tuberculosis in patients with diabetes has been high [5, 6,7]. The incidence of TB showing it to be two to five time higher in diabetic patients Than in non-diabetic patients [8,9-11]. TB in diabetic patients has been reported to have more cavitatry lesion, less sputum positivity and paucity of symptoms and signs compared to TB in non-diabetic patients [10].*
Method - *The study was carried out on patients attending the OPD/IPD of department of General Medicine, SRMS-IMS, Bareilly, U.P. between Jan'2013 to Jan-2015. After a detailed history and thorough examinations all patient were subjected to sputum smear for AFB examination, X-ray chest PA view and hematological investigation.*
Result - *A total 58 proven cases of pulmonary tuberculosis, who were known diabetics were included in this study. Out of 58 cases, 34(58.6%) were male and 24(41.4%) were female. Male to female ratio was (1.4:1). The mean age of was 48.2 + 12.3 yrs. The majority of patients were between 41-60 years of age followed by 61-80 and 20-40 years i.e. 31,12,12 respectively. Out of 58 patients, 32 (55.2%) cases were sputum positive, rest of them were sputum negative. In 32 cases 19 cases were male and 13 cases were female.*
Conclusion - *DM is a known risk factor for TB in endemic area, and this risk increases with age. In general, TB is a disease that should be considered in diabetic patients with an atypical clinical and radiological presentation.*
Keywords: *Diabetes Mellitus, Pulmonary Tuberculosis, Sputum Positive.*

Introduction

DM is a well known risk factor for TB in the past [1,2.] Patient with diabetes mellitus type-2 are in particular more prone to getting into infections, including TB, which are more difficult to treat because of their inherent weak immune system, the high prevalence of diabetes could adversely affect global TB control efforts [3,4]. The numbers of people with diabetes, which was 171 million in 2000, is expected to grow to 366 million-440

million by 2030 [5]. Historically, the incidence of tuberculosis in patients with diabetes has been high [5,6,7]. The incidence of TB showing it to be two to five time higher in diabetic patients Than in non-diabetic patients [8,9-11]. TB in diabetic patients has been reported to have more cavitatry lesion, less sputum positivity and paucity of symptoms and signs compared to TB in non-diabetic patients [10]. DM has been found to be a risk factor for death in TB patients: one study showed the risk to be two fold higher than in Those without DM [12]. DM is known to modify the clinical and radiological manifestation of palimony TB but had conflicting results. In this study, we aimed to evaluate the demographic, clinical and rediological presentation of PTB patients.

Methods

The study was carried out on patients attending the OPD/IPD of department of General Medicine, SRMS-IMS, Bareilly , U.P. between Jan'2013 to Jan-2015. After a detailed history and thorough examinations all patient were subjected to sputum smear for AFB examination, X-ray chest PA view and hematological investigation. We included only sputum smear positive pulmonary TB patients with or without extra pulmonary TB. Patient who had taken ATT, Sputum negative Pul. TB, co-existing HIV infection and, other causes for hyperglycemia-endocrinological, drug induced diabetes mellitus excluded from the study. Those patients, who had fulfilled the inclusion and exclusion criteria, were screened for Diabetes mellitus. Diabetes mellitus were diagnosed using national diabetes data group and WHO criteria.

Result

A total 58 proven cases of pulmonary tuberculosis, who were known diabetics were included in this study. Out of 58 cases, 34(58.6%) were male and 24(41.4%) were female. Male to female ratio was (1.4:1).

Sex Distribution

Gender	N	%
M	34	58.6
F	24	41.4

The mean age of was 48.2 + 12.3 yrs. The majority of patients were between 41-60 years of age followed by 61-80 and 20-40 years i.e. 31,12,12 respectively.

Age & Sex wise distribution

Age(Y)	M(%)	F(%)	Total(%)
20-40	5 (8.6)	7 (12.1)	12 (20.7)
41-60	18 (31.0)	13 (22.4)	31 (53.4)
61-80	8 (13.8)	4 (6.9)	12 (20.7)
81-100	3(5.2)	0 (0)	3 (5.2)

Out of 58 patients, 32 (55.2%) cases were sputum positive, rest of them were sputum negative. In 32 cases 19 cases were male and 13 cases were female.

Sputum AFB Results

Result	M(%)	F(%)
Sputum (+)	19(32.8)	12(22.4)
Sputum (-)	15(22.5)	11(18.9)

Cough with expectoration were present more than fifty present of the cases i.e; 52(89.7%), followed by fever 50 (86.2%), weight loss 47 (81.0%) dysnea 40 (68.9%).

Symptoms

Symptoms	No. of Patients N=(58)		
Cough with expectoration	M=34(%)	F=24(%)	Total(%)
Fever	32 (55.2)	20 (34.5)	52 (89.7)
Weight Loss	30 (51.7)	20 (34.5)	50 (86.2)
Hemoptysis	29 (50)	18(31.0)	47 (81.0)
Dyspnea	22 (37.9)	18 (31.0)	40 (68.9)
Anorexia	17 (29.3)	15 (25.9)	32 (55.2)
Chest pain	5 (8.6)	3 (5.2)	8 (13.8)
Night sweats	12 (20.7)	16 (27.6)	28 (48.3)

In our study, cavitary lesion 72.4% were the most common type of lesion followed by infiltration (36.2%) fibrosis (34.5%), consolidation (31.0%) plural effusion (24.1%).

Radiological Results

Radiological Finding	N	%
Cavity	42	72.4
Fibrosis	20	34.5
Infiltration	21	36.2
Consolidation	18	31.0
Pleaural	14	24.1
Hydropneumoshrx	5	8.6
Bronchiectasis	7	12.0`
Miliary infiltration	10	17.2

The examination of chest radiograph revealed that 86% of the patients had unilateral lesions and 14% other patients had Bilateral Lesion.

Discussion

A clinical & Radiological evaluation of 58 cases of Pul. Tuberculosis with DM was done.

In our study the total number of male was 58.6% and female was 41.4%. The male to female ration was 4.4:1. Our study were supported by the study of Patel JC & Tripathy et al [13,14]. The high incidence of disease in male is possibly due to the fact that in most countries young men usually have more social & labor activities than women, thus favoring the Transmission of diseases.

The predominant symptoms noted in our study was cough (89.7%) fever (86.2%) and weight loss (81%). Ethiopian diabetic patients with tuberculosis, the three most common symptoms of tuberculosis were fever (80.5%), sweating (80.4%) and cough (70.5%). [15]

In the present study maximum number of patient belongs to the 41-60 yrs of age group i.e. 53.4%. our study was supported by Deshmukh et al.

Conclusion

DM is a known risk factor for TB in endemic area, and this risk increases with age. In general, TB is a disease that should be considered in diabetic patients with an atypical clinical and radiological presentation. All the diabetics at the initial diagram and every year must have a chest x-ray done. All diabetics with abnormal weight loss, unexplained cough or sudden increase of insulin requirement should have sputum examination and chest x-ray done.

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