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SEROPREVALENCE OF DIABETIES MELLITUS IN TUBERCULOSIS PATIENT IN DISTRICT TB HOSPITAL BHOPAL

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ABSTRACT

Introduction- Tuberculosis and Diabetes mellitus are the two public health problems which not only often coexist but have serious implications on each other. India is facing the dual problem of being the highest TB-burden country having a large number of people with diabetes posing a serious challenge for the health system. It is well known that DM impairs the immunity of patients and therefore is an independent risk factor for infections such as TB. Doctors recently used insulin pump to control glucose level in blood. **Objective-** The purpose of this report is demonstrate to policymakers, public officials, health program managers and clinicians that the world faces a looming co-epidemic of TB-diabetes, and that this is a serious public health risk we need to urgently address. **Material and Method-** This study was carried out in a District TB hospital, Bhopal on all registered cases of TB during the period of October 2014, who were suffering from both Tuberculosis and Diabetes Mellitus. A total no. of 177 patients under various age group and sexes were registered. **Results:** In our study we found that majority were males (125/177). The age group most commonly involved was the 30-50years. We also found 10.16% of cases of tuberculosis were already having diabetes. **Conclusion:** Results of this study need to raise awareness of screening for DM in persons with TB. Study finding shows the high prevalence of DM in patients with TB in Bhopal, and that a significant proportion of patients with DM may not be aware of their glucose status.

KEYWORDS: TB; DM, prevalence.

INTRODUCTION

Tuberculosis and Diabetes mellitus are the two public health problems which not only often coexist but have serious implications on each other. India is facing the dual problem of being the highest TB-burden country having a large number of people with diabetes, posing a serious challenge for the health system.[1,2]Recently Doctors use Insulin pump to control Diabetes in four year old child Xavier.Among those with active TB, diabetes may adversely affect TB treatment outcomes by delaying the time for microbiological response, reducing the likelihood of favorable outcome and increasing the risk of relapse, death and drug resistance.[3,4]

Diabetes is a chronic, non communicable disease that weakens the immune system, making people with diabetes three times more likely to get active TB. TB is an infectious disease that spreads from person to person through the air. TB kills more people than any other infectious disease except HIV/AIDS. In India 3.1 million persons are diagnosed to have tuberculosis with mortality rate of 0.32 million per year.[5]

WHO and the International Union against Tuberculosis and Lung Disease (IUALTD) have jointly published guidelines for joint management of tuberculosis and diabetes mellitus and it recommend simultaneous screening for tuberculosis and diabetes mellitus.

OBJECTIVE

The purpose of this study is to aware the policymakers, public officials, health program managers and clinicians that the world faces a looming co-epidemic of TB-diabetes and we need to urgently address.

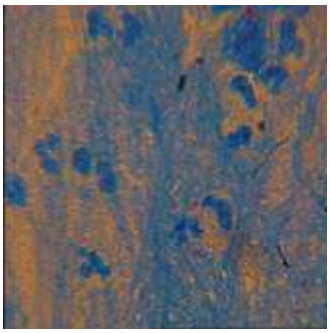
MATERIAL AND METHOD

This study was carried out in a District TB hospital, Bhopal on all registered cases of TB who were suffering from both Tuberculosis and Diabetes Mellitus. A total no. of 177 patients under various age group and sexes were registered. Patient who gave their consent during the period of October 2014 were included. Sputum sample were collected in wide mouth sterile culture container and Blood sample were collected in fluoride vial by venipuncture using aseptic precaution. All the patient were screened for RBS/FBS and Sputum sample for AFB.

AFB is done by making sputum smear and stained with AFB stain. Sugar testing was done by GOD/POD method. All of these were screened for diabetes using the diagnostic criteria of a fasting plasma glucose level of ≥ 126 mg/dl[6] or a self-reported history of taking anti-diabetic drugs after diagnosis by a medical professional.

Sugar test

Reagents



AFB positive

RESULTS

TABLE I- Screening Tubercles patient for Diabetes

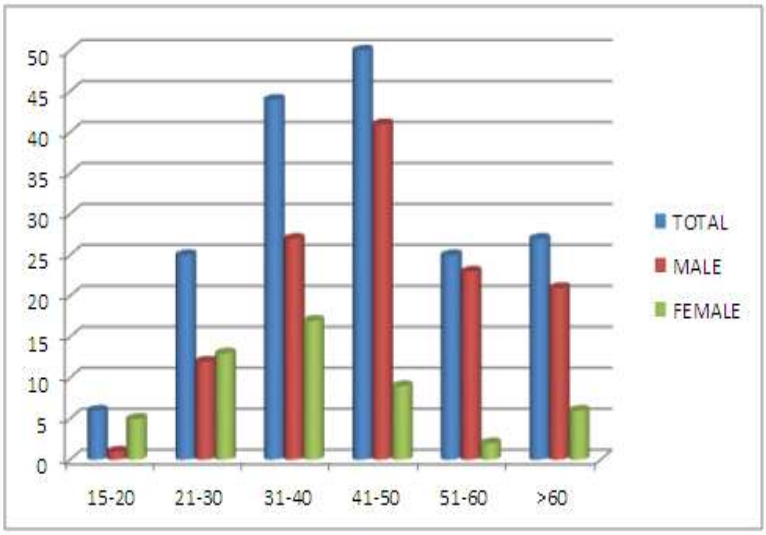
S.NO	PARTICULAR	VALUES
1	Total no of patients	177
2	No. of patients already diagnosed with diabeties mellitus	18
3	No.of tubercular patient screened with FBS	10
4.	No.of tubercular patient screened with RBS	157

TABLE II -Age and gender wise distribution in percentage

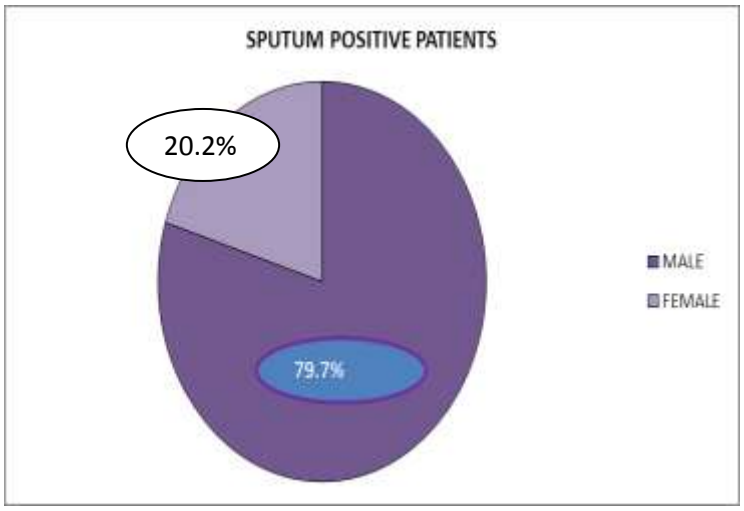
AGE GROUP	MALE n=125(%)	FEMALE n=52(%)	TOTAL n=177(%)
15-20	16.6%	83.3%	3.3%
21-30	48%	52%	14.1%
31-40	61.3%	38.6%	24.8%
41-50	82%	18%	28.2%
51-60	92%	8%	14.1%
>60	77.7%	22.2%	15.2%

TABLE III-Status of sputum sample

	MALE n/%	FEMALE n/%	TOTAL
TOTALSPUTUM +ve	67 (79.7%)	17 (20.0%)	84
SPUTUM -ve	58	35	93



GRAPH-I Represent total number of male and female age wise



GRAPH-II Represent percentage of sputum positive in male and female

DISCUSSION

In present study we planned to see the prevalence of diabetes in tubercular patients. In our study we found 10.16% of cases of tuberculosis were already having diabetes. The high prevalence of diabetes in tuberculosis patient was reported in studies from southern region of India and abroad. Study from Tamil-Nadu reported diabetes prevalence of 25% in tubercular patients.[7] A study from Kerala reported diabetes prevalence of 44% in tubercular patients which is much higher than our study.[8] Study from Pondicherry also showed higher diabetic prevalence of 29% in tubercular patients.[9]

According to Stevenson et al. nearly 15% of TB burden in India in the year 2000 was attributed to diabetes. His study group also reported that the prevalence of diabetes among

pulmonary TB was 18.4% (Stevenson et al. 2007).[10] According to(Whiting 2011) the estimated prevalence of diabetes in India was 10.4% in 2011 .

Our study is resembles to Adeyeye Olufunke were prevalence was 5.7%.

In Study by Jimenez- corona et al they found a high prevalence of diabetes of 29.63% in tubercular patients, they also reported that dual disease (diabetes+ tuberculosis) was associated with increased morbidity, more pulmonary cavities, delayed sputum conversion, high rate of treatment failure and high recurrence and relapse rate.[11]

In our study most of the tubercular patients were from younger age group i.e. age 30-50 years where as majority patient of dual disease were from 40 plus age. The majority of patients with dual disease were more than 40 years as the incidence of diabetes increases with age.
In our study group sputum positive patient was 47.5%. This finding was consistent with study done by Stevenson CR et al, in which the prevalence of sputum positive tuberculosis was 69.2%.[11]

Some studies reported the reverse relationship, i.e. TB being associated with incidence of diabetes, possibly due to increased insulin resistance provoked by the intake of ATT drug rifampicin. The inflammatory changes associated with chronic infectious conditions may also be responsible for this association. In addition to the above, TB and its treatment may also worsen the glycemic control in a subject with diabetes, it may also facilitate the progression of complications related to diabetes especially neuropathy (Brostrom)

CONCLUSION

Prevalence of diabetes in tubercular patients is very high and significant proportion of patients with DM may not be aware of their glucose status. Diabetes adversely affects the management of tuberculosis so it should be mandatory to screen all the tubercular patients for diabetes. So timely detection and management of diabetes leads to decrease morbidity and improve the treatment outcome in tubercular patients.

We also recommend further multi-centric studies with large sample size to know the true prevalence of diabetes in tubercular patients in India.

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