

## Impact of Diabetes Mellitus on Clinical Presentation & Treatment Outcome of Patients with Pulmonary Tuberculosis

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**Abstract:** Tuberculosis disease is highly endemic in India. Main aim of the study is to know the impact of diabetes mellitus on clinical presentation and treatment outcome in patients with pulmonary tuberculosis. A case control study is done on 50 cases that are age and sex matched with 50 controls, visiting Government Chest Disease and TB hospital Warangal, on presumptive pulmonary tuberculosis patients, aged between 35-60 years. Thorough history, clinical examination Sputum for AFB, CBNAAT, Chest x-ray, CBP with ESR, RBS, FBS, PLBS, HBA1C are done on all patients. There is bidirectional association between tuberculosis and diabetes. Tuberculosis is more common in diabetes. There is no significant difference in clinical presentation between diabetics and non-diabetics with pulmonary tuberculosis. Clinical improvement at the end of treatment is good in non diabetics compared to diabetics. There is increased risk of active tuberculosis & high sputum positivity in cases with diabetes when compared to controls. There is also increased risk of relapse and poor outcome at the end of treatment in patients with diabetes.

**Keywords:** Diabetes mellitus, tuberculosis, bidirectional association, sputum positivity, CB NAAT.

### INTRODUCTION

The bidirectional association between tuberculosis (TB) and diabetes mellitus (DM) is currently one of the major concerns, as DM affects the disease presentation and clinical outcome of TB and vice versa. The co-epidemic is emerging predominantly in resource poor countries where the burden of DM is increasing and also TB is highly endemic.

The prevalence of DM in India is rising and estimated to reach 123.5 million by 2040. India ranks the highest in TB burden with 23% of the global incidence cases in 2015.

Active TB and reactivation of latent infection have long been known to be a risk of DM. Multiple studies from different countries reported 12%–44% of TB cases linked with DM at the time of TB diagnosis.

### AIM & OBJECTIVES

To know the impact of diabetes mellitus on clinical presentation and treatment outcome in patients with pulmonary tuberculosis

### METHODS

A case control study is done on 50 cases that are age and sex matched with 50 controls, visiting

Government Chest Disease and TB hospital Warangal, on presumptive pulmonary tuberculosis patients, aged between 35-60 years. Thorough history, clinical examination Sputum for AFB, CBNAAT, Chest x-ray, CBP with ESR, RBS, FBS, PLBS, HBA1C are done on all patients. Duration of the study is 8 months from JANUARY 2018- AUGUST 2018.

### RESULTS AND DATA ANALYSIS

Out of 50 cases with diabetes, 76% (38) are males and 24% (12) are females. Pulmonary tuberculosis is diagnosed in 90% (45) cases with diabetes and 72% (36) in non-diabetics. 59% (26) of them are previously treated among diabetics compared to 24% (8) in non-diabetics. Sputum positivity was 61% (27) and sputum negative with CBNAAT positive/radiologically positive are 39%

[18cases].Among diabetics with pulmonary tuberculosis, 6.7% (3) are rifampicin resistance.

Among non-diabetics with pulmonary tuberculosis, 46% (16) are sputum positive. When

follow-up was done, 14 % (4) of diabetics with pulmonary tuberculosis were sputum positive at the end of treatment compared to 8% (1) in non-diabetics. Clinical improvement at the end of treatment is good in nondiabetics compared to diabetics.

**Table-1: Distribution based on microbiology**

	Cases; N=50; M-38; F-12	Controls; N=50 M-36; F-14
Pulmonary tuberculosis	45	36
Sputum positive	27	16
Sputum negative/CBNAAT/RAD	18	20

**Table-2: Radiological distribution**

	Upper lobe		Middle lobe		Lower lobe	
	consolidation	Cavity	consolidation	Cavity	consolidation	cavity
Cases	9	6	9	7	11	8
Controls	9	9	8	7	9	8

**Table-3: Treatment outcome**

	Diabetics (cases)	Non-diabetics(controls)
Cured	38(84%)	35(97%)
Treatment failure	4	1
MDR PTB	3	0

**DISCUSSION**

In present study clinical presentation, radiological presentation and treatment outcome of two group’s i.e, cases and controls is compared. Diabetics are taken as cases and non-diabetics as controls.

The common presenting symptoms are cough with expectoration followed by fever and weight loss. The above symptoms are same among cases and controls indicating that there is no significant difference in clinical presentation of both groups.

However, there is difference in duration of symptoms and the time gap between onset of symptoms and seeking medical attention in both groups. This duration is less in diabetics compared to non-diabetics.

In present study, radiological presentation of both groups based on chest radiograph findings at the time of presentation is analysed. The most common lesion in chest radiograph wasconsolidation followed by cavity followed by infiltrates. There is no zonal predilection in radiological distribution of the disease.

On comparing treatment outcome at the end of treatment, cure rates are higher among non-diabetics compared to diabetics. The sputum positivity rates at the time of treatment completion and number of cases developing resistance to first line drugs were higher in diabetics compared to non-diabetics. The time taken for sputum conversion inmicrobiologically confirmed cases is longer in diabetics compared to non-diabetics. This implies that complications are more in diabetics compared to non-diabetics.

In a recent study of 4690 elderly diabetic patients in Hong Kong, those with haemoglobin A1c greater than 7% had a three times increased hazard of active tuberculosis compared with those with haemoglobin A1c less than 7%. These data suggest that poor glycaemic control is a risk factor for tuberculosis [1].

Alisjahbana *et al.* have reported more weight loss in DM patients [2]. Few authors have revealed that clinical characteristics of TB do not differ among DM and non-DM patients [3, 4].

**CONCLUSION**

Above study concluded that there is no significant difference in clinical presentation between diabetics and non-diabetics with pulmonary tuberculosis.

There is increased risk of active tuberculosis & high sputum positivity in cases with diabetes when compared to controls. There is also increased risk of relapse and poor outcome at the end of treatment in patients with diabetes.

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