Original Research Paper

Pulmonary Medicine

STUDY ON CLINICAL AND RADIOLOGICAL PRESENTATION OF PULMONARY TUBERCULOSIS IN DIABETIC PATIENTS IN A TERTIARY CARE HOSPITAL

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ABSTRACT **BACKGROUND :** In early 1000 A.D Avicenia recognised the connection between tuberculosis and diabetes, when he noticed that tuberculosis (also known as phthisis in Greek) was frequently associated with diabetes. Yugimahamuni, an Indian saint, also identified a cluster of symptoms for the TB/diabetes connection (which he called meganoikal)

AIMS AND OBJECTIVES: Study on Clinical and Radiological Presentation of Pulmonary Tuberculosis in Diabetic Patients in a Tertiary Care Hospital

METHODS: This was an Prospective study was conducted in the New Medical College and Hospital, Kota over a period of one year from March 2019 to feburary 2020 On 100 subjects.

RESULTS: In our study, Among the study population, 58 (58.00%) had dyspnoea, 44 (44.00%) had chest pain, 68(68.00%) had loss of appetite, 60 (60.00%) had evening rise of temperature, 79(79.00%) had loss of weight, 34 (34.00%) had hemoptysis, 75 (75.00%) had cough. Among the study population, 60(60.00%) have cured, 19(19.00%) completed the treatment, 09 (9.00%) were defaulter the treatment, and remaining 12(12.00%) were treatment failures. Among the diabetic, 27 (54%) have cured, 9(18%) have treatment completed, 6 (12%) were treatment defaulter, and 8 (16%) were treatment failure.

CONCLUSION: All patients with pulmonary tuberculosis should be screened for diabetes mellitus and should be effectively treated for the same. Pulmonary Tuberculosis patients who have diabetes tend to have higher sputum positivity rates and delayed sputum conversion if glycemic levels are poorly controlled

KEYWORDS : Diabetes,Haemoptysis,Defaulter

INTRODUCTION

- In early 1000 A.D Avicenia recognised the connection between tuberculosis and diabetes, when he noticed that tuberculosis (also known as phthisis in Greek) was frequently associated with diabetes. Yugimahamuni, an Indian saint, also identified a cluster of symptoms for the TB/diabetes connection (which he called meganoikal)

- According to a recent study published in BMC Medicine, diabetes is responsible for a large portion of India's tuberculosis burden. This disease is related to 15.8% of pulmonary tuberculosis and 21.2 percent of smear-positive i.e. infectious tuberculosis19. When compared to rural areas, the tuberculosis situation is changing, with an urban preponderance likely due to diabetes20. Poverty, on the other hand, is a separate risk factor for tuberculosis. The diagnosis of this co-epidemic is delayed in rural areas.

- In 2010, India's population over the age of 20 was projected to be 487,573,000. Diabetes affected 5.3 percent of the population, or about 21,707,639 people. Pneumococcal tuberculosis struck 949,064 people. Smear-positive and contagious were found in 575,900 people. According to recent reports, 17.4% (12.5 percent to 29.9%) of people with pulmonary tuberculosis (both smear-positive and smear-negative) in India have diabetes

- The first mention of diabetes as a cause of polyuria was made in Papyrus Ebers at Luxor in Egypt in 1500 B.C. Aretaeus of Cappadocia coined the term diabetes in the second century AD. It is derived from the Greek word syphon.

- With the current prediction that the prevalence of DM will increase to close to 552 million by the year 2030, it is most likely that the rise in the number of people with DM may complicate TB care and control and vice versa – especially in many areas where the two diseases coexist.

- Apart from the conventional risk factors of poverty, malnutrition, overcrowding, and immunosuppression, such as HIV/AIDS, diabetes is increasingly being recognised as a separate risk factor for tuberculosis, and the two often coexist. According to many studies conducted around the world, 5–30 percent of TB patients also have diabetes mellitus.
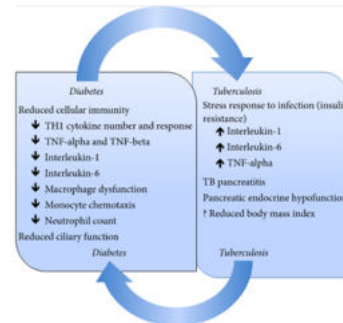
AIMS AND OBJECTIVES :

- The primary objective of the research study on Clinical Presentation of Pulmonary Tuberculosis in Diabetic Patients in a Tertiary Care Hospital.
- To screen the newly diagnosed tuberculosis patients registered under RNTCP (Now NTEP) for diabetes mellitus in GMC KOTA during year 2019-2020.
- To Compare the measures of TB severity at clinical presentation (including lung cavitatory disease, sputum smear grade, and hemoptysis) in patients with and without DM.
- To note the response to treatment of Pulmonary Tuberculosis in diabetes with respect to sputum conversion.

MATERIALS AND METHOD:

- Prospective study
- Number of patients-100

Criteria of inclusion :

- Patients who have constitutional symptoms of tuberculosis
- Patients who are older than 18 years of age

- Patients who are sputum positive tuberculosis.
- History of diabetes mellitus.

Criteria of Exclusion :
- Patients on steroids, thiazide diuretics
- HIV patients
- Sputum smear negative Pulmonary tuberculosis cases and extra pulmonary tuberculosis
- Patients not willing to participate.
- Pregnant women and women in postpartum period less than 6 weeks of delivery
- Multi drug resistance Tuberculosis patients
- Known case of diabetes mellitus

Data Collection:
- After taking an informed consent a thorough history was taken including cardinal symptoms of the patient.
- Detailed history with respect to age, sex, risk factors like smoking, alcohol and pan chewing was collected.
- The symptoms at the time of presentation and Chest X-Ray findings were recorded.
- Mycobacterial load was assessed and sputum smear were done at 2 months and at end of treatment.
- Patients were regularly followed.
- Adverse drug reactions were monitored.
- Mainly 5 adverse drug reaction nausea and vomiting, peripheralneuropathy, liverinjury, hypoglycaemia and back pain were monitored.
- Liver injury was defined as clinical symptoms and signs of toxic hepatitis or elevation of enzymes more than 3 times normal.
- All patients underwent fasting blood glucose testing at initiation of TB treatment.
- Diabetic patients were offered anti-diabetic medications at the diabetic clinic.

RESULTS :

Table 1

Variables	Diabetic (N=50)	Non Diabetic (N=50)	P value
Dyspnea	37	21	**0.001**
Chest Pain	28	16	**0.015**
Loss of Appetite	30	38	0.086
Loss of weight	38	41	0.4614
Hemoptysis	22	12	**0.034**
cough	35	40	0.1332
Sputum Positivity 1+	7	22	**0.002**
Sputum Positivity 2+	28	22	
Sputum Positivity 3+	15	6	

Table 2

Zone infiltrate on x ray	Diabetic (N=50)	Non Diabetic (N=50)	P value
Upper zone	33	42	**0.037**
Middle zone	16	10	0.171
Lower zone	28	11	**0.0004**

Table 3

Treatment outcomes	DIABETIC STATUS		P- Value
	Diabetics	Non diabetics	
Cured	27(54%)	33(66%)	**0.393**
Completed	9 (18%)	10 (20%)	
Defaulter	6 (12%)	3 (06%)	
Failure	8 (16%)	4 (08%)	

TABLE 1: Association of diabetic status with various other variables of study population
TABLE 2: Descriptive analysis of zone infiltrates category in study population
TABLE 3: Association of diabetic status with treatment outcomes of study population

DISCUSSION:
- Among the study population, 50 (50%) were diabetics and 50 (50%) were non-diabetic and mean age of diabetic status was 51.1 ± 9 and non-diabetic was 34.2 ± 7.26.
- Among the study population 38(38.00%) were smokers, 36 (36.00%) were alcoholics and 15 (15.00%) were habituated to pan chewing.

- Among the study population, 58 (58.00%) had dyspnoea, 44 (44.00%) had chest pain, 68(68.00%) had loss of appetite, 60 (60.00%) had evening rise of temperature, 79(79.00%) had loss of weight, 34 (34.00%) had hemoptysis, 75 (75.00%) had cough.
- Among the diabetic, 6 (12%) had positivity 1+ , 30 (60%) had positivity 2+ , and 14 (28%) had positivity 3+ .Among the non-diabetic, 21 (42%) had positivity 1+ , 24 (48%) had positivity 2+ , and 5 (10%) had positivity 3+ .
- Among the diabetic, 33 (66%) were upper zone infiltrates, 16 (32%) were middle zone infiltrates, 28 (56%) were lower zone infiltrates
- Among the non-diabetic, 42 (84%) were upper zone infiltrates, 10 (20%) were middle zone infiltrates, 11 (22%) were lower zone infiltrates
- Among the diabetic, 27 (54%) have cured, 9(18%) have treatment completed, 6 (12%) were treatment defaulter, and 8 (16%) were treatment failure. Among the non- diabetic, 33 (66%) have cured, 10(20%) treatment completed, 3 (06%) were treatment defaulter, and 4 (08%) were treatment failure. The difference in the proportion of diabetic status between treatment outcomes was statistically not significant (P value 0.393)
- Among the study population, 28 (28.00%) hadperipheral neuropathy, 25 (25.00%) had liver injury, 6 (6.00%) had hypoglycemia, 11 (11.00%) had back pain, and 52 (52.00%) had nausea vomiting.
- The difference in the proportion of diabetic status between dyspnoea , chest pain and hemoptysis was statistically significant (P value <0.05)
- The difference in the proportion of diabetic status between sputum positivity was statistically significant (P value 0.002).
- The difference in the proportion of diabetic status between upper zone & Lower zone infiltrates was statistically significant (P value <0.05)
- The difference in the proportion of diabetic status between treatment outcomes was statistically not significant (P value 0.393)

CONCLUSION
- All patients with pulmonary tuberculosis should be screened for diabetes mellitus and should be effectively treated for the same.
- Pulmonary Tuberculosis patients who have diabetes tend to have higher sputum positivity rates and delayed sputum conversion if glycemic levels are poorly controlled
- Patients with coexisting pulmonary tuberculosis and diabetes mellitus have atypical presentations. Chest radiographs of such patients show multiple cavitations with predominant lower lobe involvement
- The rates of treatment failures and treatment outcomes are adversely affected by the presence of diabetes.

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