

Frequency of Newly Diagnosis Patients of T2DM and COPD in the Department of Pulmonology at HMC Hospital Peshawar a Qualitative, Cross-Sectional, and Observational Study

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ABSTRACT

Background: Since the immune system weakens in people with DM, Tuberculosis is one of the most prevalent infectious diseases .

Objective: This study aimed to determine the prevalence of various forms of active Tuberculosis among people with diabetes.

Methodology: This Cross-sectional, observational, and qualitative methods were use din this investigation. Patients with diabetes whom et the inclusion criteria (cough with or without expectoration, hemoptysis, persistent fever, and unexplained weight loss) were questioned in one of three pulmonology department outpatient clinics (OPDs). The short duration of diabetes, ageless than ten and more than 85 years, and all cases of immune compensation and secondary diabetes were excluded. When looking in to the possibility of TB, a thorough history, clinical exam, and tests were performed once permission was obtained. All of the information was loaded into SPSS version 24 for further analysis As a result, 151 people were chosen for further testing for TB out of a total of 550 patients questioned. Active TB was found in just 19 individuals (13percent).The mean age was 52.03±10.01, the male-to-female ratio was 01.08:01.04, and the mean duration of diabetes observed was 10.04 years. All were type 2 diabetics exception which turned out to be type 01. Out of the total cases of Tuberculosis, 54% were determined to be pulmonary cases and 45% were extrapulmonary cases. Pulmonary cancer had an 11% primary rate, an 18% secondary rate, and a 6% millitary rate. Smear positivity was identified in 57% of patients, and multidrug-resistant Tuberculosis was discovered in 21%, about twice the rate seen in non-diabetic cases.

Results: As a result, 151 people were chosen for further testing for TB, and 550 patients were questioned. Active TB was found in just 19 individuals (13 per cent). The mean age was 52.03 ±10.01, the male-to-female ratio was 01.08:01.04, and the mean duration of diabetes observed was 10.04 years. All were type 2 diabetics except one which turned out to be type 01. Out of the total cases of Tuberculosis, 54% were determined to be pulmonary cases and 45% were extra pulmonary cases. Pulmonary cancer had an 11% primary rate, and 18% secondary rate, and a 6% millitary rate. Smear positivity was identified in 57% of patients, and multidrug-resistant Tuberculosis was discovered in 21%, about twice the rate seen in non diabetic cases.

Conclusion: Tuberculosis frequency is more prevalent in people with diabetes than in the general population. Extrapulmonary Tuberculosis occurs more often in people with diabetes compared to those without the disease. Diabetics should be screened more often for the illness so that MDR-TB doesn't spread and become a major public health issue in this underdeveloped nation.

Keywords: Diabetes, pulmonary Tuberculosis, extra-pulmonary Tuberculosis, tuberculosis variants, drug-resistant Tuberculosis

INTRODUCTION

The traditional mother of all diseases refers to diabetes¹. This issue, in Part, to the fact that people who undergo immunomodulation are more likely to get Tuberculosis (TB) than the general population Diabetes is on the rise worldwide. Due to their compromised immune systems, people with diabetes are at increased risk of contracting Tuberculosis, and eadly disease². The World Health Organization ranks the illness prevalence in Pakistan at #08, with an estimated 09.07 % of the urban and rural population affected³. There is the evidence between diabetes with TB. Sufferers of Tuberculosis have been hypothesised to be at an increased risk of developing diabetes mellitus⁴. There are now around [01.04] million TB patients in Pakistan, with an additional [0.24] million developing the illness each year. Studies and polls show that the rate at which people with diabetes in Pakistan get Tuberculosis is much higher than the global average [14-19%]. This study aimed to examine the prevalence

of diabetes and Tuberculosis in South Africa and to compare the prevalence of diabetes and Tuberculosis in the general population. Chronic cough, weight loss, and extended fever as a result of diabetes supported by biochemical/microbiological/serological data were accepted as inclusion criteria for patients aged 11-85 with diabetes of more than 06 years duration^{5,6}. To analyse the different variants of Tuberculosis in diabetic populations of Karachi, Pakistan, we excluded patients with secondary diabetes, those taking steroids or imm

unosuppressants, those with polyglandular autoimmune diseases, and those with a history of H/O tuberculosis who had undergone complete ATT⁷.

METHODOLOGY

This study was performed in the wards, OPDs, and the chest OPD at Hmc Peshawar using a random sample of patients between January 2021 and Jan 2022. The treating doctors used the inclusion criteria to select the patients. Consent was obtained orally, a complete medical history was recorded, and a comprehensive physical examination was performed, all of which yielded positive results. Blood CBC with ESR, HbA1C, FBS, and sputum for three samples for DR/AFB, X-ray Chest PA view, and sputum for DR/AFB was the minimum recommended studies. SPSS version 24 was used to input all the data for statistical analysis. Patients who tested positive for Tuberculosis were asked about the diabetes management and when they first noticed symptoms. They were also categorised according to the location and kind of their infection.

RESULTS

Only 151 of the 550 diabetic patients who presented at one of MTT's three HMC outpatient clinics met the study's inclusion criteria. The patients' median and mean ages were both 52 years old. The Number of men to women was 0.08 to 1. In particular, smoking and gutka use accounted for at least 59% of the

iraddictionrates. The average time spent by people with diabetes was 12.0405.11. Only three individual shadan HbA1c cofless than 6%, soun controlled diabetes was common. The average HbA1c was 7.35%0.97. 19% OF the 151 individuals was diagnosed with active TB. These individuals' diabetes had been going on for a longtime, as seen by the high mean HbA1c (above 6%). Eleven (57.5%) of the patients tested positive for TB on a sputum smear, where as nine (44.5%) tested negative. There were 13 cases of pulmonary TB (59%) and 8 cases of extrapulmonary TB (40%). Table 01 displays the various pulmonary TB variations, whereAs table02 displays the many extrapulmonary tuberculosis subtypes. The various clinical presentations of TB are summarised in [Table No. 03]. Forty-nine per cent of diabetics had a BCG vaccination record.

Table 1: StrainsofPulmonaryTB;totalpatients11(54%)

S.No	Part of the lung involved]	Noofpatients	Smear+
01	Unilateral apical	03	01
02	Bilateral apical	01	01
03	Unilateral apical	01	01
04	Unilateral upper lobe consolidated	01	01
05	Unilateral middle lobe consolidated	02	Nil
06	Unilateral middle obe	01	01
07	Unilateral pleural effusion	01	Nil
08	Cavitating mass	01	01

Table 2: StrainsofextrapulmonaryTB[N=09]

S.No	Extra-pulmonarysite	Numberofpatients	Smear+
01	Milliary/Disseminated	01	01
02	Intestinal	05	02
03	Lymph nodes cervical	01	Nil
04	KidneyS renal	01	Nil
05	Skin	01	Nil
06	Meninges	01	Nil

Table 3:OverallcareTBkindsamongpeoplewithdiabetes(N=19)

S.No	TypeofTB	Numberofpatients	Smear+
01	Primary TB	02 10%	01
02	Post-primary TB	03 18%	03
03	Reactivation TB	01 06%	01
04	Extra-pulmonary TB	08 42%	02
05	MDR-TB	04 21%	04
06	Milliary TB	01 05%	01

DISCUSSION

The traditional medical adage goes like this, "Diabetes is the mother of all ailments"⁸ Because of immunomodulation and other variables, Tuberculosis is one of the most prevalent infectious diseases acquired by the diabetic population⁹. There is a linear association between the spread of Mycobacterium tuberculosis and the rise in the prevalence of type 2 diabetes across the world. This study's finding of an incidence of 13% is significant compared to the general population's (0.3%in2019), and it corroborates the findings of a 2019 review paper by Workneh and colleagues that identified an incidenceof15%of diabetic TB in Pakistan¹⁰. Because of this growth in the rise in new cases, poor care, lack of follow-up, self-medication, avoidance behaviours, unhealthylifestyles,lackofhygienepractices,andtheuseof steroidsindiabeticasthmaticsareallcontributing factors. In this investigation, TB was most prevalent in the mediastinum, lymphnodes, and vertebrae, and in the kidneys, blood, and nervous system(meninges and Adrenals)last. They are 16 years old and chronic public spitting offender¹¹. One More This study indicated that a high incidence of addiction and a lack of BCG immunisation were major risk factors for smear-positive TB among people with diabetes. Several investigations, including one by Aliya Siddiqui in 2012, provide strong evidence for these criteria. The study by Baghoei Petal. From2015 confirms that non-adherence to medication and greater HbA1c are significant risk factors¹³.Only one participant had type 1 diabetes, and another had diabetes as an accidental finding in meningeal TB. Most (56%) of TB cases were found to be pulmonary TB; however, in previous study, this was only the case in 7-10% of nondiabetic participants. This study indicated that among people with diabetes, multidrug-resistant

Tuberculosis occurred at a rate of 21%, where as among nondiabetics, it occurred at a rate of 12%. In this study, 52% of participants were vaccinated with BCG and 51% were not inoculated since EPI did not begin its immunization campaign until after [1971]¹⁴. People born before this time were not vaccinated, making them more susceptible to disease transmission. The rate was just 53.8%, while it was 68% in then on diabetic group. Shown by a plethora of study efforts. It's the most frequent co-population; on the other hand, extrapulmonary TB among people with diabetes was 41.2% compared to 33% in non diabetics. As a result, non diabetic people are more likely to develop pulmonary TB, where as people with diabetes are more likely to develop extrapulmonary TB¹⁵.Almost identical to non diabetics, those with diabetes are more likely to develop pulmonary TB in the upper and apical lobes. The most common location for extrapulmonary Tuberculosis is the intestines. The study identified hypertension, ischaemic heart disease, bronchial asthma, COPD, nephropathy, and neuropathy as morbidities. Several studies have shown a correlation between these issues and having diabetes mellitus, having the condition for a longer period, and leading a less active lifestyle. 21 More study is needed to determine if these co-occurring conditions affect the prevalence of diabetes and tuberculosis¹⁶.

CONCLUSION

The hypothesised result of this study agrees with prior experience. As a result, it must be right. Diabetes patients have a substantially greater incidence of tuberculosis, particularly extrapulmonary tuberculosis, than nondiabetic populations. Diabetes patients Secondary tuberculosis often affects the upper and apical lobes after the first stage. Extrapulmonary Tuberculosis is more often seen in the intestine. MDR-TB is fairly common among diabetics, and if substantial efforts are not taken promptly and rapidly, this will become a major public health problem in the future.

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