ORIGINAL RESEARCH

Prevalence of tuberculosis in diabetic subjects

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Abstract

Background: This study was conducted to assess the Prevalence of tuberculosis in diabetic subjects.

Material and methods: Patients with chest conditions who visited the hospital's outpatient clinic were surveyed to determine the incidence of tuberculosis, TB in conjunction with diabetes, and antituberculosis drug resistance. The hospital's records were examined carefully, and the information was entered into an Excel spreadsheet.

Results: In this study, there were total 100 subjects having tuberculosis and diabetes mellitus out of which 50 were males and 50 were females. Majority of the subjects belonged to the age group of 41-60 years. Out of 500 subjects attending the hospital, only a 100 of then had tuberculosis and diabetes mellitus. Hence, the prevalence of the condition was found to be 20%.

Conclusion: The prevalence of tuberculosis with diabetes mellitus was 20%. Knowledge of the reciprocal relationship between communicable and noncommunicable diseases can encourage primary care doctors to effectively manage both, and increased screening and treatment efforts can further reduce prevalence in a community.

Keywords: tuberculosis, diabetes, prevalence.

Introduction

Tuberculosis (TB) and diabetes mellitus (DM) are two diverse conditions of immense public health importance existing for centuries. TB was traditionally identified with poverty while DM was considered as an entity associated with prosperity. TB is today one of the commonest and widespread communicable infectious diseases largely but not necessarily confined to low-economic groups. DM on the other hand spearheads the group of chronic non-communicable diseases affecting people across all socio-economic strata. Contrary to previous beliefs, a larger number of people with DM are living in middle- and low-income countries. Unfortunately, these are the countries where DM is expected to increase in the near future.[1] Both DM and TB have been associated with significant morbidity and mortality from time immemorial. Advancements in modern medical science over the years has definitely improved the outcome in both these conditions. But the magnitude of these two diseases has not waned and both are collaborative in worsening each other. In fact, the increase in the population affected with DM is sustaining the TB epidemic.

Hence, this study was conducted to assess the Prevalence of tuberculosis in diabetic subjects.

Material and methods

Patients with chest conditions who visited the hospital's outpatient clinic were surveyed to determine the incidence of tuberculosis, TB in conjunction with diabetes, and antituberculosis drug resistance. The hospital's records were examined carefully, and the information was entered into an Excel spreadsheet. From the files, we were able to jot down the patient's basic information (demographics), diagnosis, treatment history, drug susceptibility test results, and comorbidities. The role of diabetes in influencing illness progression and response to treatment was evaluated. Percentages were used to represent all data. After entering the data, the percentage of each metric was calculated in an Excel spreadsheet. Statistical analysis was performed with the help of SPSS software. The Chi-square test was used to compare the percentage of patients who had TB and those who had DM across different time periods. In this study, statistical significance was defined as a P value below 0.05.

Results

Table 1: Gender-wise distribution of subjects.

Gender	Number of subjects
Males	50 (50%)
Females	50 (50%)
Total	100 (100%)

There were total 100 subjects having tuberculosis and diabetes mellitus out of which 50 were males and 50 were females.

Table 2: Age-wise distribution of subjects.

Age group	Number of subjects
<20 years	13 (13%)
20-40 years	26 (26%)
41-60 years	51 (51%)
61-80 years	10 (10%)
>80 years	00 (00%)

Majority of the subjects belonged to the age group of 41-60 years.

Table 3: Prevalence of TB among the patients attending the hospital.

Total number of subjects attending chest diseases department	500
Total number of subjects having tuberculosis and diabetes	100
Prevalence of subjects having tuberculosis and diabetes.	20%

Discussion

Diabetes mellitus (DM) and tuberculosis (TB) are major killers of mankind across the globe.[2] The World Health Organization (WHO) global report for 2015 indicates that, there were 10.4 million new cases and 1.4 million deaths resulting from TB.[3] In the same year, 415 million cases and 5.0 million deaths due to DM were registered.[4] About 95% of TB and 75% of the DM cases live in low- and middle income countries. The rising prevalence of DM is a potential threat to TB control. Poorly controlled DM increases the risk of TB and leads to unfavorable TB treatment outcomes.[5,6] WHO has recommended a collaborative framework for the clinical management and control of TBDM comorbidity. Three important intervention strategies namely, establishing mechanisms of collaboration between TB and DM control programs, detection and management of TB in patients with DM, and detection and management of DM in TB patients have been recommended.[7] Some countries in Asia (China and India) have piloted the TBDM collaborative framework and have demonstrated that bi-directional screening for both diseases is feasible.[8-10] It may also be important if other countries implement this strategy to reduce the dual burden of TBDM comorbidity. However, for policy making and implementation of this strategy, it is crucial to primarily understand the magnitude and associated factors of TBDM comorbidity particularly in low- and middle-income countries. Hence, this study was conducted to assess the Prevalence of tuberculosis in diabetic subjects. In this study, there were total 100 subjects having tuberculosis and diabetes mellitus out of which 50 were males and 50 were females. Majority of the subjects belonged to the age group of 41-60 years. Out of 500 subjects attending the hospital, only a 100 of then had tuberculosis and diabetes mellitus. Hence, the prevalence of the condition was found to be 20%. SembiahS et al[11]determined the prevalence and associated factors of diabetes in TB patients and their impact on treatment outcome of TB. This was a longitudinal follow-up study of registered TB patients under the Revised National Tuberculosis Control Program in all five TB units of Bhopal district. Participants were contacted and the interview was conducted. The blood sugar of all TB patients was checked, and they were followed up to assess the treatment outcome from October 2014 to September 2017. Data were analyzed using SPSS (version 16.0. Chicago, SPSS Inc.). Logistic regression was done to find the factors for diabetes in TB patients. The Chi-square tests were used to find the difference in treatment outcomes and assess the relative risk for poor outcome in diabetic TB patients. Of total 662 TB patients, 82 (12.39%) were diagnosed as diabetic. Age >50 years, males, higher body mass index, pulmonary TB, patients on Category II treatment, and history of smoking were found to be predictors of diabetes in TB patients. The treatment outcome of TB was more unfavorable (defaulter, failure, and death) in diabetic TB patients (16.17%) than in nondiabetic TB patients (5.8%) (risk ratio = 2.78, 1.469-5.284 confidence interval). It was concluded that the high prevalence of diabetes and the unfavorable treatment outcome in diabetic TB patients make screening and management of diabetes at an early-stage crucial for a better outcome in TB patients.

Conclusion

The prevalence of tuberculosis with diabetes mellitus was 20%. Knowledge of the reciprocal relationship between communicable and noncommunicable diseases can encourage primary care doctors to effectively manage both, and increased screening and treatment efforts can further reduce prevalence in a community.

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