CLINICAL AND PARACLINICAL ASPECTS OF PULMONARY TUBERCULOSIS IN DIABETES PATIENTS

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Abstract

Diabetic patients are not only more susceptible to infection but when infections do occur they are more severe as the diabetic is a compromised host. The frequent association of diabetes mellitus (DM) pulmonary tuberculosis (PTB) has been recognized for many years. It has also been realized that the diabetic patient, particularly metabolic uncontrolled, is more susceptible to the development of pulmonary tuberculosis disease than this nondiabetic counter part. In population of developing countries, tuberculosis remains a significant cause of morbidity and mortality in types 2 and 1 of diabetes mellitus (3).

The aim of this study is to determine some characteristics of pulmonary tuberculosis disease in patients with diabetes mellitus.

Settings and design

A retrospective review of the medical records of 50 smear positive PTB patients with DM associated admitted in the "M. Nasta" Pneumoftisiology Institute during a year was performed.

To define the characteristics of pulmonary tuberculosis in patients with diabetes mellitus, the following data regarding the DM history were noted: the age and the sex of the patients, the age of DM appearance in the patients, the old of DM, the type of DM and the degree of metabolic control of DM during 2 month of antituberculostatic chemotherapy (the mean values of blood glucose levels at the time of PTB diagnosis and after 2 month of antituberculostatic chemotherapy). Regarding PTB there was noted clinical aspects and radiological manifestations of disease.

The diagnosis of pulmonary tuberculosis was made by thorough clinical, radiological and bacteriological examinations. The extent of the disease was classified into minimal, moderately advanced and far advanced lesions groups.

The diagnosis of diabetes mellitus was established from the clinical symptoms and the estimation of blood sugar levels according to the criteria laid down by the OMS for the new cases of DM, and from the history of DM for old cases of DM.

Results and Discussions

The patients were in the age between 22 and 82 years and the mean age was 49,4 years (SD ± 14,64) (Figure 1) Tuberculosis tends to increase with increasing age (5). It has been observed that 76% of the patients were in the age group of 40-69 years; the similar results were also observed in the other international

studies (10). Most of the patients (86%) were T2DM (Figure 2).

Regarding the type of DM, 70% of patients had T2DM and only 30% of the patients had T1DM.

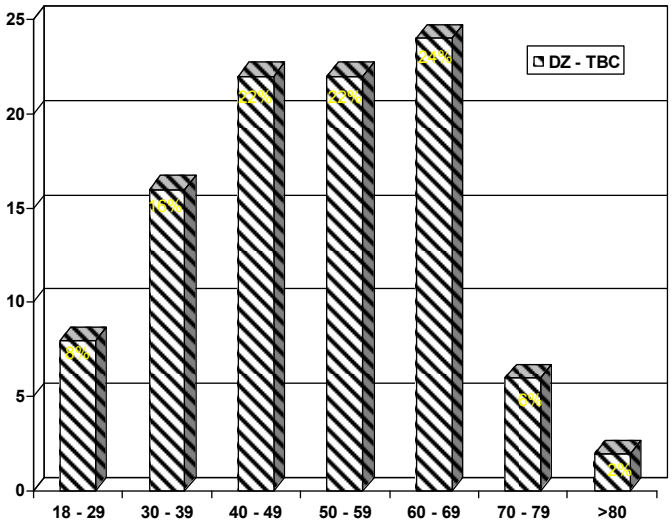


Figure 1. Age Distribution of DM-PTB Patients

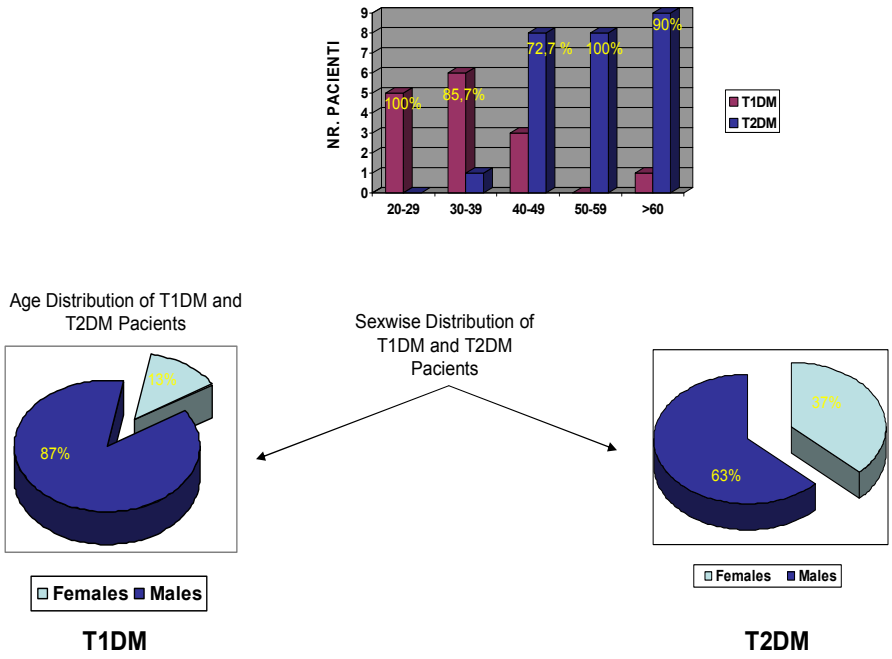


Figure 2. Age and Sexwise Distribution of DM-PTB Patients

In the present study the number of male was almost double than of females showing a

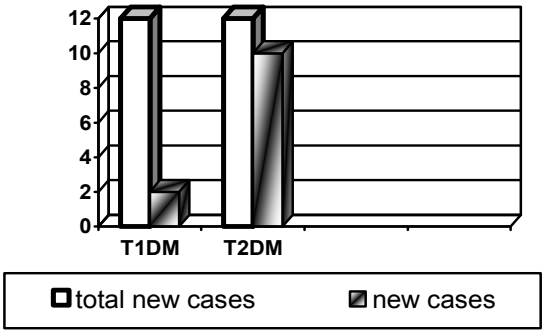
clear male preponderence in both T1DM and T2DM. (Figure 2). This result is comparable with other study (8).

The age of DM apparence in the patients was between 10 and 72 years and the mean age was 43,7 years (SD±16,6). It has been observed that 60% of the patients diagnosticated with DM were above 40 years of age.

It has been shown from the history that 58% of patients were detecting with DM for 1-10 years, 18% for 10-20 years and 22% of pacients were at the onset of DM.

Among the newly diagnosis cases of DM, 16,6% belongs to T1DM and 83,33% to T2DM. It has been observed that all newly diagnosis T1DM patients had specific symtoms of PTB, and 90% from the newly diagnosis T2DM patients were symptomatic at the moment of PTB diagnosis (Figure 3).

The symptoms of PTB were not equally distributed between the T1DM and T2DM. Among the all patients with PTB-DM association, 86,6% of the pacients with T1DM had symtoms of PTB, comparing with only 60% of the patients with T2DM patients .(Figure 4)



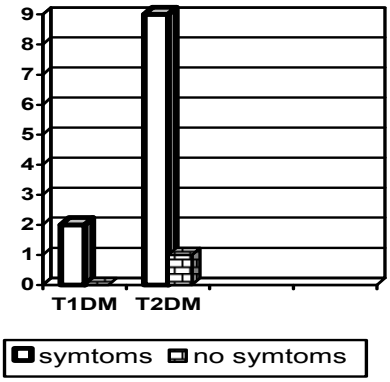


Figure 3. Distribution of Newly Diagnosis Cases of DM According to Type of DM and to Simptomatology of TBC at the Time of Diagnosis

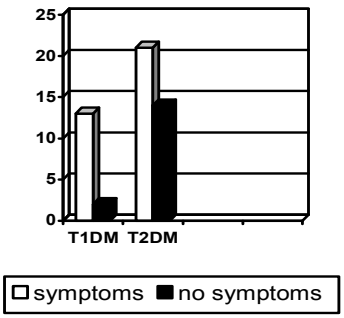


Figure 4. Distribution of Patients according to Symptomatology

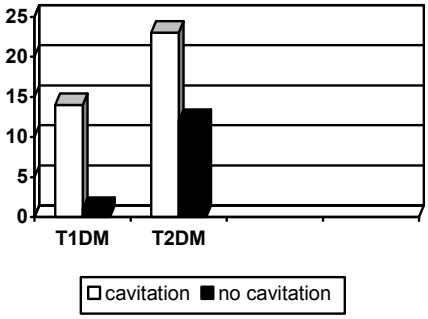


Figure 5. Distribution of Cavitary PTB in the T1DM and T21DM

Out chest x- rays findings, 62% of patients had unilateral lesions, while 38% of patients had bilateral lesions. Cavitation aspect was found in 72% of patients, homogeneus and heterogeneus opacities in 22% of patients and fibrosis in only 6% of patients.

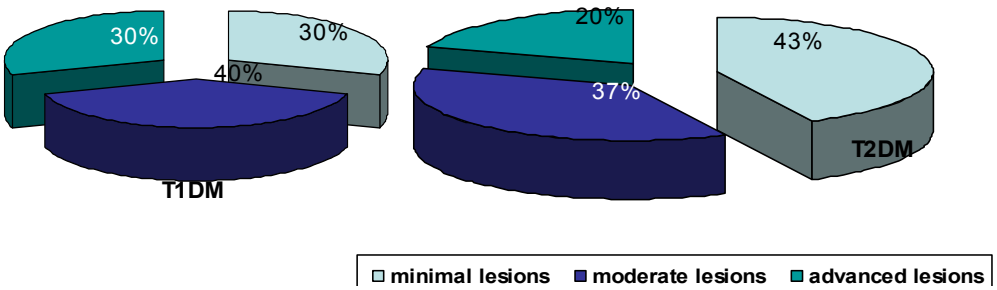
The T1DM-PTB group of patients had significantly higer frequency of cavitary lung lesions compares to T2DM-PTB group (93,3% versus 65,7; p=0,05)

It has been noted that in patient with T1DM was an equal distribution (30%) refering to minimal, moderate and advanced lesions. In the T2DM group, 43% of the patients had minimal lesions, 37% of them had moderate lesions and 20% had advanced lesions.(Figure 6). This results may be due to majority of the patients were already on insulin therapy.

There are other studies almost in contrast to our study (12). It has been observed that 76% of DM-PTB patients were new cases of PTB and 24% were readmissions for PTB.

Out of the total 50 cases, only 0,6% of the patients had resistance to usually anti-tuberculosis drugs so they received an individualised antituberculostatic therapy (ATT)

Distribution of T1DM and T2DM according to extension of pulmonary lesions

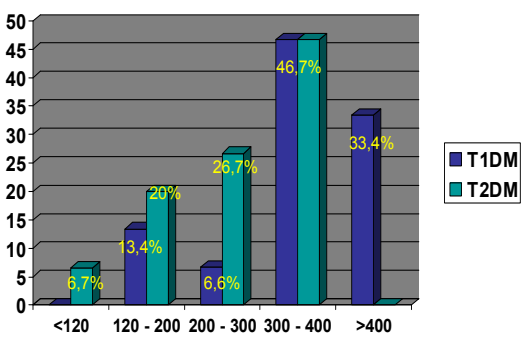


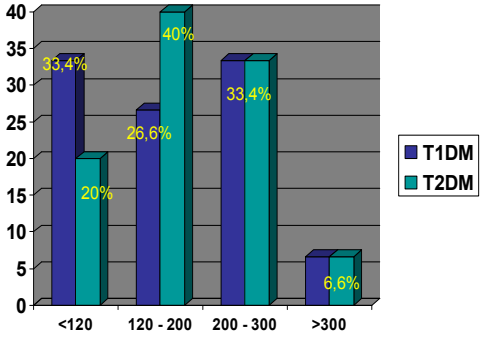
To determine the degree of metabolic control of DM during 2 month of antituberculostatic chemotherapy it has been noted the mean values of blood glucose levels at the time of PTB diagnosis and after 2 month of ATT. The mean values of blood glucose levels at the time of PTB diagnosis was 310mg/dl (SD±88,6), revealed a poorly controlled diabetes mellitus. After 2 month of antituberculostatic chemotherapy, the mean values of blood glucose levels was 168mg/dl (SD±62) so the patients returned with DM under relativ good control.

The epidemiological, paraclinical and therapeutical viewpoinds in many studies clearly established the efficiency of ATT in annulling the negative influence of the diabetes mellitus – tuberculosis morbid association.(8). Unfortunately, the liability of this patients persisted in spite of the best control of tuberculosis by tuberculostatics. It must be mentioned here some of the effects of antituberculosis drugs on glucose metabolism. Rifampicin, an major tuberculostatic drug, accelerates the metabolism of oral hypoglycemic agents, as it is a potent hepatic enzime – inducing agent (11). It was also

known to cause early hyperglycemia in non-diabetic patients with or without pulmonary tuberculosis, and also to augment intestinal absorbtion of glucose. Chronic rifampicin treatment manifesting hypercortisolism and unstable glycemic control led to a misdiagnosis of Cushing´s syndrome due to occult ectopic ACTH secretion with long standing T1DM and PTB.(11).

Distribution of Mean Glucose Levels at the Moment of PTB Diagnosis and after 2 Month of ATT According to the Type of DM





Apart from causing pancreatic hypofunction and peripheral insulin insensitivity, long-term administration of ATT interfered with hydrolysis and absorption of carbohydrates in small intestine in newly detected persons with pulmonary tuberculosis.(2)

Conclusions

- PTB – DM association was more frequently in patients with T2DM, with ages more than 40 and majority patients were male.
- The patients with PTB – T1DM association had a higher frequency of cavitary and more extensive lung lesions compared to patients with PTB – T2DM association.
- Among patients with PTB – DM association there wasn't significant differences regarding the answer to antituberculostatic chemotherapy (the sputum conversion rates, the radiological manifestations of TBC) and the improvement of glucose blood levels between T1DM and T2DM.
- Among PTB patients presenting with extensive lung radiological lesions, possibility of DM should be considered for an immediately diagnosis and management.

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