Glucose Intolerance in Pulmonary Tuberculosis

Pages with reference to book, From 237 To 238

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Abstract

The frequency of glucose intolerance was studied in 106 patients with pulmonary tuberculosis attending Nazimabad Chest Clinic. Diagnosis was based on X-ray and a positive sputum smear. An oral glucose tolerance test (OGTT) was performed and evaluated according to the WHO criteria. Glucose intolerance was detected in 52(49%) patients, 31 Impaired Glucose Tolerance (IGT), 21 Diabetes Mellitus (DM). After adequate antitubercular therapy and sputum conversion, the OG1'T was repeated in 23 cases. Of these 13 (56.5%) patients had a normal glucose tolerance indicating that glucose intolerance observed during active pulmonary tuberculosis improves or normalizes after adequate therapy (JPMA 45:237, 1995).

Introduction

The association of diabetes mellitus and pulmonary tuberculosis was first observed by Avicenna[1] and has also been reported by other workers[2]. Diabetics am four to five times more prone to contract tuberculosis than the general population[3]. Subclinical diabetes becomes manifest due to stress of prevailing infection, whereas status of glucose intolerance improves or normalizes following effective antitubercular therapy[4]. The present study was undertaken to unmask glucose intolerance in patients with active pulmonary tuberculosis and to assess the effect of adequate treatment on its reversal.

Patients and Methods

One hundred and six patients with pulmonary tuberculosis attending the out-patients of Nazimabad Chest Clinic were studied. Diagnosis was based on a positive sputum smear for tubercle bacilli demonstrated by the Ziehi Nelson staining technique and a radiographic evidence of pulmonary tuberculosis. Known diabetics and patients i ready receiving anti-tubercular therapy were excluded. A structured proforma was filled out and details of family history of diabetes and tuberculosis, smoking habits, literacy and occupation were recorded. Oral glucose tolerance test (OGTT) was performed with a 75 Gm glucose load, as recommended by the WHO[5]. Fasting and 2 hours post-glucose capillary blood was tested by Reflolux meter using haemoglucotest 800-BG (Boehringer Mannheim). Venous plasma from every filth case was analysed at the Diabetic Association by the reagent kit method GOD (glucose oxidase)/POD (perioxidase) from Miles Ames Division for correlation. Patients were treated with anti tubercular drug regimes recommended by the chest clinic and monitored periodically. Glucose intolerance was managed at the Diabetic Association of Pakistan either with a sugar restricted diet only. oral hypoglycaemic agents or insulin as required. On sputum conversion and radiographic improvement, an OGTT with 75 Gm glucose was repeated on 23 of the 52 patients who continued to come for follow-up.

Results

Of 106 patients included in this study, 63 were males and 43 females. Their mean age was 39.3 years.

The distribution of cases in various age groups is shown in Figure 1.

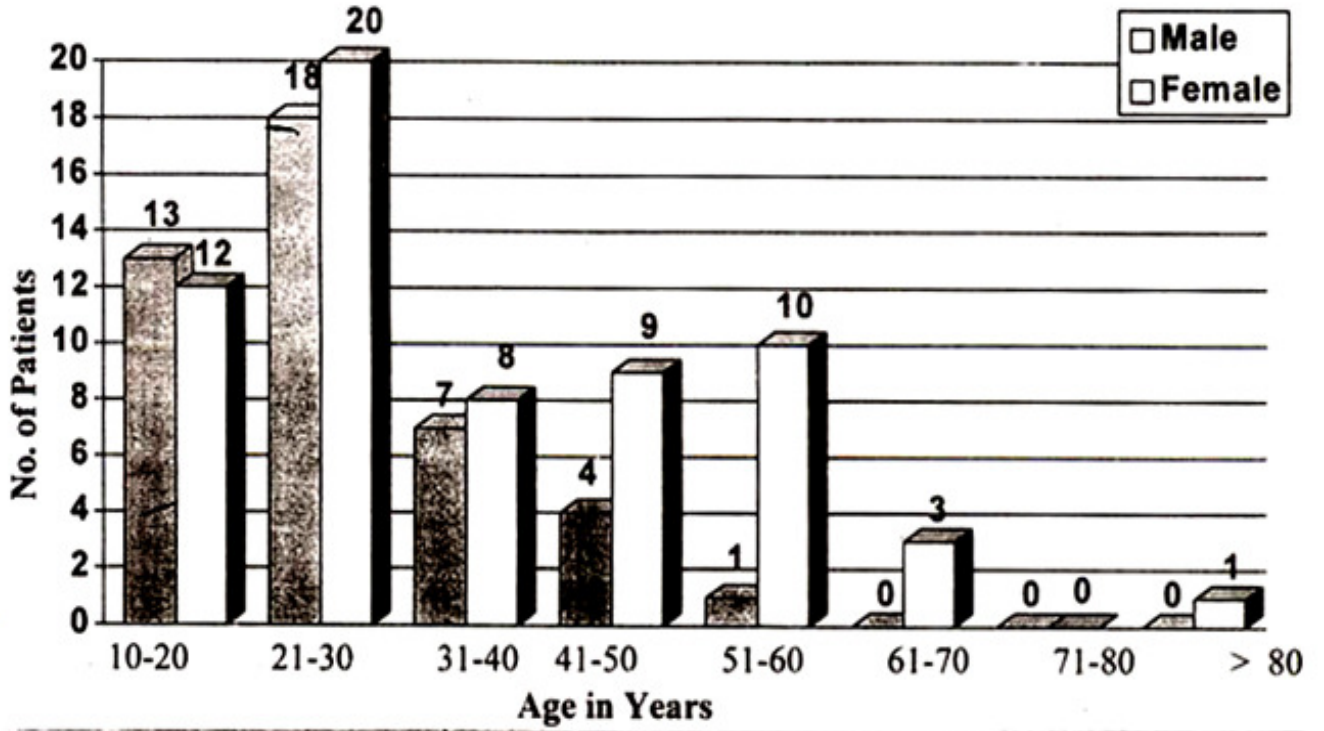

Figure 1. Age distribution.

A positive family history of diabetes mellitus in the first degree relatives was found in 8 patients, 20 had pulmonary tuberculosis in the immediate family and 3 had both. The intensity of radiographic lesions as classified by Crofton[6] are shown in Figure 2.

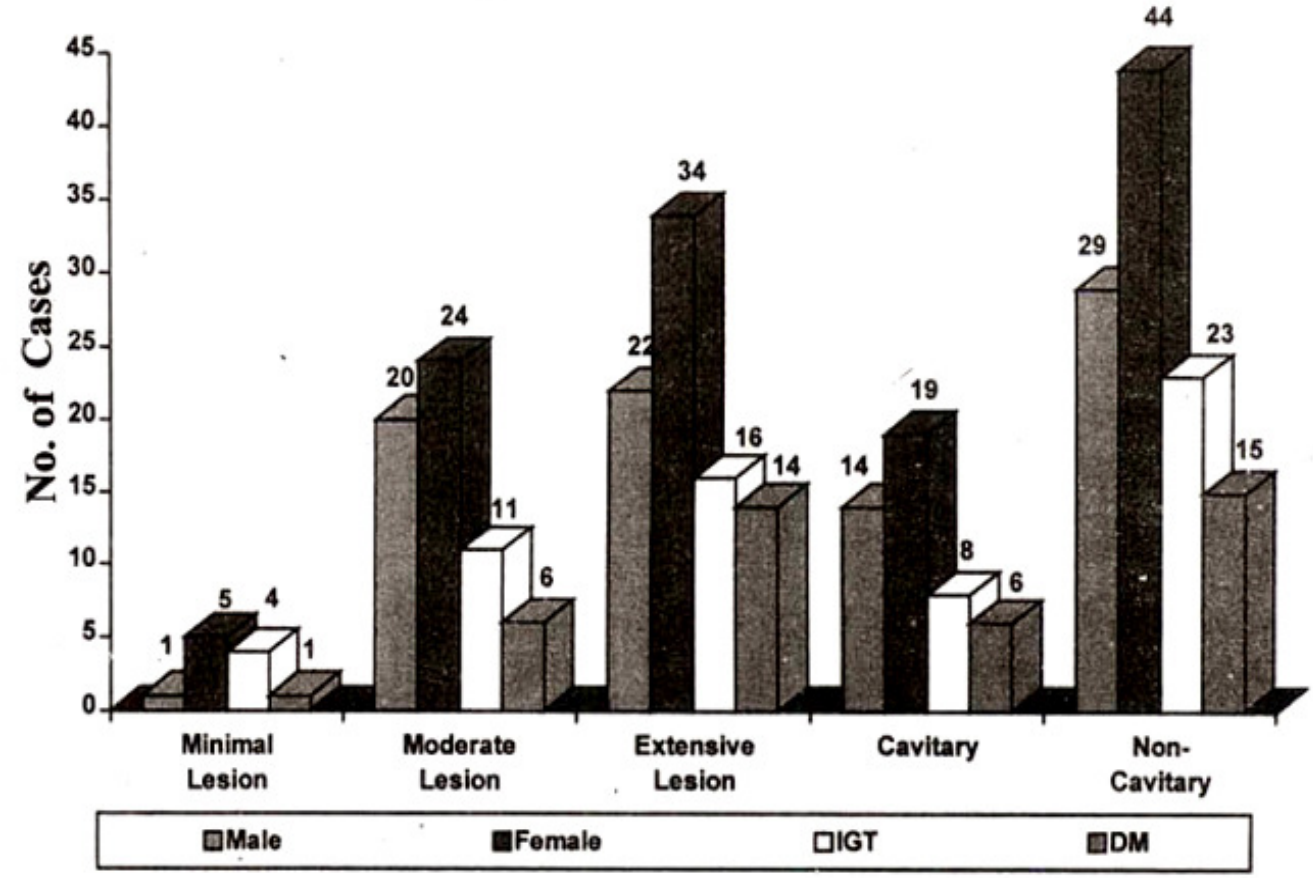

Figure 2. Radiographic findings.

The results of OGTF interpreted according to WHO criteria[5] showed that 31 cases (29.2%) had impaired glucose tolerance (IGT) and 21 patients (19.8%) diabetes mellitus (DM). After adequate chemotherapy, sputum conversion and management of the diabetes mellitus an OGTT was repeated in 10 patients with DM and 13 with IGT Glucose tolerance reverted to the normal range in 13 subjects (56.6%)(5 from the DM and 8 from the IGT group). Seven cases had IGT (2 from the DM and 5 from the IGT group). Three individuals continued as manifest diabetes.

Discussion

Tuberculosis was a major cause of death in diabetics before the discovery of insulin[7]. A high incidence of glucose intolerance in patients with active tuberculosis has also been reported by a number of workers[3,8,9]. Occult glucose intolerance could either be a cause for the development of pulmonary tuberculosis or some endocrine abnormality may predispose to both impaired glucose tolerance and tuberculosis[10]. This study shows that 49% cases with active pulmonary tuberculosis bad glucose intolerance which compares well with 42.6% reported in a Nigerian study[11]. In this study, IGT was detected in 29.2% and diabetes mellitus in 19.8% subjects. The Nigerian study revealed 37%IGTand5.6%DM. Of 53.6% patients with extensive radiographic lesions, 53.3% had IGT and 46.7% diabetes mellitus. This high figure can be attributed to the severity of the infection. Extensive and cavitatory tubercular lesions have been associated with diabetes mellitus[12] although an altered host response due to an impaired immune system in diabetics is still under debate[13]. Glucose tolerance improved in 56.5% of 23 patients reassessed after adequate chemotherapy for 4-6 months and control

of disease. Of 13 IGT patients, OGTT returned to normal in 8 (6.1.5%) and remained impaired in 5 (38.5%). The Nigerian study pave figures of 75% normal and 25% JOT in the similar group[11]. This study indicates that patients with pulmonary tuberculosis, especially those with active and extensive disease should be screened for glucose intolerance. After adequate control of disease with chemotherapy and management of the diabetes, all the subjects should be re-assessed by. OGTT. Status of glucose tolerance not only improves but also reverses to normal following effective therapy.

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