

Rheumatological Manifestations in Diabetes Mellitus

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A study was undertaken in the department of medicine from November 2003 to July 2005 with a view to find out the prevalence of different rheumatological problem in Indian diabetic population. Although several such studies have been conducted in western population very limited data are available from our country. A total of 80 patients were studied out of which 43 had some form of rheumatological manifestations. Dupuytren's contracture was found in highest number of cases (n=23) followed by limited joint mobility in 16 patients; adhesive capsulitis in 19 patients; trigger finger in 4 patients; aglodystrophy, carpal tunnel syndrome and hyperostosis were found in 2, 3 and 2 cases respectively. Symptomatic osteo-arthritis was found in 19 cases. [J Indian Med Assoc 2008; 106: 593-4]

Key words : Diabetes, rheumatological complication.

Diabetes mellitus (DM) comprises a group of common metabolic disorders characterised by hyperglycaemia. The major complications of diabetes are vascular, both microvascular and macrovascular like retinopathy, neuropathy, nephropathy or coronary artery disease. In contrast, rheumatological manifestations affecting the musculoskeletal system though less life threatening, sometimes lead to considerable debility. Of the various types of complications some are uniquely or commonly associated with DM. These are adhesive capsulitis (AC), shoulder hand syndrome, diabetic hand syndrome, Dupuytren's contracture (DC) and Charcot's neuroarthropathy.

Several studies have been conducted in western countries to see the prevalence of these rheumatological conditions in diabetic population. However, only limited studies have been done in our country. The present study was carried out to find out the frequency and distribution of different rheumatological problems in Indian diabetic population.

MATERIAL AND METHOD

The study was undertaken in the department of medicine, Medical College Kolkata. A total of 80 patients (both type I and type II) were selected randomly from the diabetic clinic, during the period of November 2003 to July 2005. A detailed clinical examination was undertaken in

each patient with particular emphasis on the examination of musculoskeletal system.

The following patients were excluded from the study: (1) Patients with secondary diabetes (eg, Cushing's syndrome). (2) Patients with diabetic nephropathy and end stage renal disease. (3) Patients with primary rheumatological diseases. (4) Patients with non-rheumatological causes having rheumatological manifestations in association with diabetes mellitus (eg, cerebrovascular accident with frozen shoulder, alcoholism with Dupuytren's contracture).

After examination, the clinical diagnosis of the rheumatological problem was made and recorded. Cases with diagnostic dilemma were investigated for correct diagnoses. These included haemogram, ESR, fasting and postprandial blood glucose, glycosylated haemoglobin, serum urea and creatinine, uric acid and lipid profile, urine for routine and microscopic examination and to see for micro-albuminuria, x-rays of relevant joints as required.

Ultimately 2 groups of diabetic patients were formed, one group having rheumatological problems and the other group having no rheumatological manifestations.

Frequency of patients with rheumatological manifestations was compared with those without them by χ^2 (Chi-square) test.

OBSERVATIONS

Total number of male and female patients in the study were 41 and 39 respectively. The age ranged from 20-76 years with a mean age of 51.8 ± 11.8 years. The duration of diabetes ranged from less than 1 year (lowest 1 month) to 37 years with a mean of 6.46 ± 6.32 years.

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In this series of 80 patients, 43 (20 males and 23 females) had some form of rheumatological manifestations.

Mean age of those affected and those not affected was 55.7±9.9 years and 47.35±12.4 years respectively. This difference in mean age is statistically significant ($p < 0.001$). The male to female ratio of the two groups is not statistically significant ($p > 0.01$). The mean duration of diabetes in patients with rheumatological problems was 8.12±7.75 years and those without any such problems was 4.54±4.07 years. All patients ($n=6$) with a duration of diabetes more than 16 years had rheumatological manifestation. The difference of mean duration between these two groups is statistically significant ($p < 0.021$).

Out of these 80 patients, DC was found in highest number of cases ($n=23$; 28.8%); limited joint mobility (LJM) in 16 patients (20%); AC in 19 patients (23.8%); trigger finger (TF) in 4 patients (5%); aglodystrophy (AD), carpal tunnel syndrome (CTS) and hyperostosis were found in 2, 3, 2 cases respectively. Symptomatic osteo-arthritis was found in 19 cases (23.8%) (Table 1).

There was also significant overlapping in the different rheumatological manifestations. Out of 16 LJM cases 6 had frozen shoulder (AC), 9 had associated DC, 1 had reflex sympathetic dystrophy (AD), 1 had TF, 1 had CTS and 4 had osteo-arthritis. Among the 19 patients with AC, 9 had associated DC, 1 had reflex sympathetic dystrophy, 2 had TF and 9 had osteo-arthritis.

Among the patients with DC 3 had TF, 2 had reflex sympathetic dystrophy and 11 had osteo-arthritis.

DISCUSSION

Of the 80 diabetic patients selected for the study 43 had some form of rheumatological problem.

The prevalence of LJM was 20% and it increased significantly with the age of the patient but there was no statistically significant correlation with duration of diabetes. Referring to previous studies, the prevalence of LJM varied enormously in different series. Rosenbloom and Frias¹ detected LJM in 30% of diabetics under 30 years of age. Among patients with duration of diabetes more than 4.5 years the prevalence was even higher (48.5%)¹. Arkkila *et al*² had shown prevalence of LJM as 52.9%.

The prevalence of DC was 28.8%. Different studies have reported the prevalence of DC in the range of 20 to 63%. Noble *et al*³ reported the prevalence of DC in the diabetic population as 42% and a relationship with advanced age and duration. Prevalence of DC increased significantly with age ($p < 0.001$) and duration of diabetes ($p < 0.01$) in this study.

The prevalence of AC or frozen shoulder was 23.8%. There was no association with age or duration of diabetes. Bridgman⁴ reported an incidence of AC in diabetic

Table 1 — Sexwise Distribution of Cases with Rheumatological Manifestations

Rheumatological manifestations	No of cases		
	Male	Female	Total
Limited joint mobility	9	7	16 (20%)
Adhesive capsulitis	7	12	19 (23.8%)
Dupuytren's contracture	13	10	23 (28.8%)
Trigger finger	3	1	4 (5%)
Agrodystrophy	1	1	2 (2.5%)
Carpal tunnel syndrome	1	2	3 (3.8%)
Hyperostosis	2	0	2 (2.5%)
Osteo-arthritis	6	13	19 (23.8%)

population as 11% compared to 2.5% in non-diabetics. Arkkila *et al*⁵ reported the prevalence of AC 10.3% in type I and 22.4% in type II patients.

There were 19 cases of osteo-arthritis involving mainly the knee and ankle joints with a prevalence of 23.8%. However it is a common problem in general population with old age and obesity. The prevalence of primary generalised osteo-arthritis in Indian population is around 24.8%⁶. As such the association of osteo-arthritis and diabetes has not proved convincing. However small joint osteo-arthritis is more frequently seen in diabetic people.

From the above observations it is clear that more than 50% of diabetics suffer from rheumatological problems and the rheumatological manifestations are similar in pattern to the earlier documentation in western literature. There are variations in certain respect in this study, some of which are due to small sample size, some are due to geographical or population variation. It appears that whatever be the population chosen, clinically detectable soft tissue rheumatism occurs more frequently than clinically detectable bone and joint problems. Explanation to this is clearly not known, but altered microvasculature or altered collagen due to glycosylation are the possible aetiologies, which are in fact the basic mechanisms of diabetic complications.

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