

The Commonly Encountered Rheumatological Manifestations amongst Patients with Type 2 Diabetes

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ABSTRACT

Introduction: Type 1 DM is the result of complete or near-total insulin deficiency. Type 2 DM is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion, and increased glucose production. Several studies have reported an association of early osteoarthritis and DM. The present study was conducted with the aim to analyze the commonly encountered rheumatological manifestations amongst patients with type 2 diabetes.

Material and methods: The study was conducted among 100 patients of already diagnosed type 2 diabetes mellitus, attending outpatient/inpatient department of Department of Medicine, Rajindra Hospital/ Government Medical College, Patiala. The selected patients were subjected to further evaluation using Baseline diabetic questionnaire: Name, age, sex, occupation especially manual labor, height, weight, BMI (We considered overweight subjects with a BMI between 25 and 29.9 and obesity with BMI >30 kg/m²),³ duration and onset of type 2 diabetes, smoking habits, any history of systemic diseases, medications: oral hypoglycemic or insulin injection, blood sugar level: fasting, post prandial and glycosylated hemoglobin. Musculoskeletal system was systematically examined. Student t test was used for statistical analysis. Probability value of less than 0.05 was considered as significant.

Results: The age ranges from 41 years to 80 years. Most of the patients were between 61-70 years of age and were 40% of the total patients. In our study out of 100 diabetic patients 27 had rheumatological manifestations. The most common manifestation was Osteoarthritis (Osteoarthritis knee in our study) which was found to be present in 14% cases. Out of 100 patients 27 had rheumatological manifestations out of which 11 were males and 16 were females. 35 males and 38 females were without rheumatological manifestations.

Conclusion: Rheumatological manifestations are common amongst subjects with Type 2 diabetes mellitus. The overall prevalence of rheumatological manifestations was 27%. This could be helpful in preventing chronic disability in patients and improving their quality of life. Good glycemic control is a key to prevent rheumatological manifestations in patients with T2DM.

Keywords: Diabetes, Rheumatological, Glycemic, Quality

are two broad categories of DM designated type 1 and type 2. Type 1 DM is the result of complete or near-total insulin deficiency. Type 2 DM is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion, and increased glucose production.¹ Rheumatologic disorders described in the patients with diabetes can be divided into four categories: Disorders which represent intrinsic complications of diabetes, Disorder related to metabolic derangement, Disorders which share similar etiological mechanisms, Other rheumatological disorders which are common in general population have increased prevalence in diabetic population.² Degenerative joint disease (Osteoarthritis) is the commonest rheumatic disease in the general population. It most commonly involves the large weight bearing joints. Obesity is a risk factor for both conditions. Several studies have reported an association of early osteoarthritis and DM. Both large and small joint osteoarthritis have been reported to be increased in type 2 diabetes. The incidence is more in type 2 diabetics.³ Changes in the connective tissue of patients with diabetes are probably due to disturbances in the structural macromolecules of the extra cellular matrix.⁴ Ageing and obesity are the two main risk factors for osteoarthritis. Main osteoarthritis phenotypes described in the literature are ageing, post-traumatic, hormonal, genetic and metabolic osteoarthritis.⁵ Though a lot of research work has been done in microvascular and macrovascular complications of T2DM but rheumatological manifestations in T2DM have been less studied subject. The present study was conducted with the aim to analyze the commonly encountered rheumatological manifestations amongst patients with type 2 diabetes.

MATERIAL AND METHODS

The study was conducted among 100 patients of already diagnosed type 2 diabetes mellitus, attending outpatient/

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INTRODUCTION

Diabetes mellitus refers to a group of common metabolic disorders that share the phenotype of hyperglycemia. Depending on the etiology of the DM, factors contributing to hyperglycemia include reduced insulin secretion, decreased glucose utilization, and increased glucose production. There

inpatient department of Department of Medicine, Rajindra Hospital/ Government Medical College, Patiala. Detailed clinical examination and biochemical profile was obtained as per preset proforma, after informed consent in their vernacular language. The criteria for diagnosis of diabetes mellitus were according to the criteria laid down by the American Diabetes Association, 2014. Patients with history of injury or fractures in the joint region, Patients with history of end stage renal disease and Patients with history of chronic liver disease were excluded from the study. All the patients and their relatives were informed about the study in their vernacular language. Written consent was taken. Complete clinical examination was done and all the routine investigations as in proforma were undertaken. The selected patients were subjected to further evaluation using Baseline diabetic questionnaire: Name, age, sex, occupation especially manual labor, height, weight, BMI (We considered overweight subjects with a BMI between 25 and 29.9 and obesity with BMI >30 kg/m²)³, duration and onset of type 2 diabetes, smoking habits, any history of systemic diseases, medications: oral hypoglycemic or insulin injection, blood sugar level: fasting, post prandial and glycosylated hemoglobin. Musculoskeletal system was systematically examined. First, the hands were examined, followed by the shoulders, then spine, and finally the lower limbs. All the data thus obtained was arranged in a tabulated form and analyzed using SPSS software. Student t test was used for statistical analysis. Probability value of less than 0.05 was considered as significant.

RESULTS

Table 1 shows the distribution of cases according to age. The age ranges from 41 years to 80 years. Most of the patients were between 61-70 years of age and were 40% of the total patients.

Table 2 shows distribution of various rheumatological manifestations in patients with T2DM. In our study out of 100 diabetic patients 27 had rheumatological manifestations. The most common manifestation was Osteoarthritis (Osteoarthritis knee in our study) which was found to be present in 14% cases. Second most common complication was Adhesive capsulitis which was found to be present in 12% cases. The prevalence of Carpal tunnel syndrome was found to be 7% in diabetic individuals in present study. Flexor tenosynovitis was found to have a prevalence of 6%. Diabetic cheiroarthropathy was found in 4% of patients. Diabetic amyotrophy and Dupuytren's contracture were found to have a prevalence of 1% each in patients suffering from T2DM. Diabetic osteoarthropathy, Reflex sympathetic dystrophy and Diffuse Idiopathic skeletal hyperostosis were not found in any of the patients suffering from T2DM enrolled in the study.

Table 3 shows the distribution of cases according to gender. Out of 100 patients 27 had rheumatological manifestations out of which 11 were males and 16 were females. 35 males and 38 females were without rheumatological manifestations. In our study association of rheumatological manifestations

Age Groups (in years)	No. of Patients	%age
41-50	14	14.0
51-60	36	36.0
61-70	40	40.0
71-80	10	10.0
Total	100	100

Table-1: Distribution of patients according to age

Rheumatological Manifestations	No. of Patients	%
Overall prevalence	27	27.0
Osteoarthritis	14	14.0
Adhesive capsulitis	12	12.0
Carpal tunnel syndrome	7	7.0
Flexor tenosynovitis	6	6.0
Diabetic cheiroarthropathy	4	4.0
Diabetic amyotrophy	1	1.0
Dupuytren's Contracture	1	1.0
Diabetic osteoarthropathy	0	0.0
Reflex sympathetic dystrophy	0	0.0
Diffuse idiopathic skeletal hyperostosis	0	0.0

N.B. Many patients had more than one rheumatological manifestations

Table-2: Distribution of various rheumatological manifestations in T2DM

Gender	With Rheumatological manifestations	Without Rheumatological manifestations	P value
Male	11	35	>0.05
Female	16	38	
Total	27	73	

Table-3: Distribution of patients according to gender

in T2DM Patients with gender is non significant.

DISCUSSION

A Study by Del Rosso (2006) found that rheumatological complications of Diabetes Mellitus may be classified in: non articular, articular and bone conditions. Among non particular conditions, diabetic cheiroarthropathy, frequent in type I diabetes, the most important disorder related to limited joint mobility, results in stiff skin and joint contractures. Adhesive capsulitis of the shoulder, flexor tenosynovitis, and Dupuytren's and Peyronie's diseases are also linked to limited joint mobility. Diffuse skeletal hyperostosis, due to calcification at entheses, is frequent and early, particularly in type 2 diabetes. Neuropathies cause some non articular conditions, mainly neuropathic arthritis, a destructive bone and joint condition more common in type I diabetes. Algodystrophy, shoulder-hand and entrapment syndromes are also frequent. Mononeuropathy causes diabetic amyotrophy, characterised by painless muscle weakness. Among muscle conditions, diabetic muscle infarction is a rare, sometimes severe, condition. Among articular conditions, osteoarthritis is frequent and early in diabetes, in which also chondrocalcinosis and gout occur. Rheumatoid arthritis (RA)

and diabetes I have a common genetic background and the presence of diabetes gives to RA an unfavourable prognosis. Among bone conditions, osteopenia and osteoporosis may occur early in type 1 diabetes. Contrarily, in type 2 diabetes, bone mineral density is similar or, sometimes, higher than in non diabetic subjects, probably due to hyperinsulinemia.⁶ In present study of 100 patients 27 were found to have rheumatological manifestations. The most common manifestation was Osteoarthritis (Knee in our study). In earlier studies as one done by Sarkar et al⁷ and another by Douloumpakas et al⁸ osteoarthritis was found in 31% and 31.2% respectively. In a study done by Mathew et al⁹ and Abourazzak et al¹⁰ prevalence of osteoarthritis was 20.64% and 49% respectively. Mohan et al¹¹ conducted a study and found osteoarthritis in 18% of subjects studied. This agrees with present study. Adhesive capsulitis was second most common complication in our study and found in 12% subjects. This is comparable to studies done by Cagliero et al³⁶ and other studies shown in the table. Flexor tenosynovitis and CTS were found to be fairly common among diabetics as shown in present study and similar findings were noted in earlier studies done by Cagliero et al¹², Douloumpakas et al⁸ and Abourazzak et al.¹⁰ The mean values of age of patients with T2DM in the various studies conducted by, Abourazzak et al¹⁰, Mohan et al¹¹, Kumar et al⁵⁹, were 61±10, 57.72±10, 57.59±10.44 years respectively. The mean age of patients in our study was 59.28±8.02 years. This agrees with the previous studies. In our study gender difference in prevalence of rheumatological manifestations was non significant. This is in agreement with Attar et al.⁵⁰ Study conducted by Cagliero et al¹² found females to have increased prevalence. This difference may be due to racial factors. Sarkar et al (2003) did a study to find out the prevalence of different rheumatological problem in Indian diabetic population. Eight hundred and sixty known diabetics and 800 rheumatic patients were evaluated during the period 1991 to 2000.: Adhesive capsulitis was seen in 17.9% diabetics. Shoulder hand syndrome was observed in 1.8% diabetics. Diabetic hand syndrome was seen in 13.1% of diabetics. Osteoarthritis of knee, was observed in 31% of diabetics. Dupuytren's contracture was noted in 46.7% of diabetics. Hyperostosis of spine was seen in 28.7% of diabetics. Neuroarthropathy was seen in 3.2%. They concluded that Adhesive capsulitis, diabetic chierarthropathy, dupuytren's contracture and DISH are more prevalent in diabetics.⁷ Douloumpakas et al (2007) conducted a pilot study including 208 sequentially selected patients with type 2 Diabetes Mellitus who regularly followed up at Hippokratian University Hospital. They concluded that musculoskeletal disorders are common finding among patients with type 2 diabetes mellitus.⁸

CONCLUSION

Rheumatological manifestations are common amongst subjects with Type 2 diabetes mellitus. The overall prevalence of rheumatological manifestations was 27%. The most common musculoskeletal complication was osteoarthritis which was found to be present in 14% cases.

Second common complication was adhesive capsulitis which was found to be present in 12% cases. The diabetic patients need to be regularly screened for rheumatological complications or any bone disorders. This could be helpful in preventing chronic disability in patients and improving their quality of life. Good glycemic control is a key to prevent rheumatological manifestations in patients with T2DM.

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