

A Prospective Observational Study to Correlation of Sign & Symptoms of Articular and Abarticular with Type 2 Diabetes Mellitus Patients

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ABSTRACT

Background: Diabetes mellitus leads to various complication ranging from microvascular, autonomic to cerebrovascular disease. Every organ of body is affected by the disease. The aim of this study to correlate of sign & symptoms of articular and abarticular with type 2 diabetes mellitus patients.

Materials & Methods: The present study is prospective observational study that includes all patients who were having type 2 DM and who present with articular or abarticular manifestations. Patients presented in outpatient department and admitted in-patient department are included in patient. Information obtained from the patients' symptoms and informed consent was taken to involve in study. All patients had a complete systemic examination.

Results: We observed that Osteoarthritis was the most prevalent symptom in the all the articular and abarticular manifestations which was present in 865 patients. Osteoarthritis was present in 39% of total patients compared to 76% in all the patients with manifestation.). Out of 2210 patients 1421 patients were having HbA1c either 6.5 or more than 6.5. While 789 patients of diabetes type2 were having HbA1c below 6.5.

Conclusion: Rheumatological manifestations of diabetes affects significant population. Known from more than century their exact mechanism and pathology is yet to understand completely. Good glycemic control can improve these manifestations as there was strong association between glycemic control and manifestations.

Keywords: Diabetes Mellitus, Rheumatological, Glycemic Control, Osteoarthritis.

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INTRODUCTION

Diabetes mellitus is defined as metabolic disorder in which there is hyperglycemia and symptoms originated due to hyperglycemic state. It is consist of type 1 and type 2. However there is increasing recognition of other forms of diabetes like gestational diabetes and others.¹

Worldwide prevalence of DM is on rise. It is estimated that 592 million individual will have diabetes worldwide specially concentrated in developing countries due to westernization of life style and genetic predisposition towards diabetes.²

70% of people with diabetes live in India (65.1 million) and China (98.4million).³ There is high prevalence of diabetes in urban India.

Very large number of subjects are with impaired blood glucose level are on verge of conversion to diabetes.

Rheumatology and diabetes share many characters and have many things in common like Immunopathogenesis. Connective tissues and other soft tissues are effect in diabetes and causes alteration in the articular and abarticular manifestations. While major complications of Diabetes are extensively studied extra articular manifestations are neglected. Quality of life gets affected in patients with these manifestations. Disability cause by these manifestations severely affects patient's life. These manifestations are associated with disability and decreased quality of life.

MATERIALS & METHODS

The present study is prospective observational study that includes all patients who were having type 2 DM and who present with articular or abarticular manifestations. Patients presented in outpatient department and admitted in-patient department are included in patient.

Inclusion Criteria

1. All adult type 2 diabetes mellitus patients age more than 18 years.
2. Having articular and abarticular manifestations.

Exclusion Criteria

1. Type 1 Diabetes Mellitus.
2. Pt's with Rheumatoid arthritis, Systemic lupus erythematosus.
3. Microcrystalline or metabolic arthropathies.
4. Patients with crystal arthropathy.
5. Trauma related musculoskeletal morbidities.

Following Manifestations Studied in Each Individual

1) Limited Joint Mobility or Diabetic Cheiroarthropathy:

Patient presents with symptoms of stiffness or loss of strength in extremities. For examination patient asked to join palmar surface of interphalangeal joint of both hand. Known as 'Prayer sign'. Table top sign is another way to evaluate same in which patient is asked to keep hie hand on a table and asked to join palmar surface with the table surface. If patient is unable to perform it completely then passive movement by examiner by extending patient's finger upto 180 degree or more at proximal interphalangeal joint. Distal interphalangeal joint shows a resistance to passive movement. Limitation in Distal joint is lesser then the proximal joint. Normal range of movement were expected at other joint also including wrist(70 degrees), elbow(degrees), ankle(100 degrees), lateral flexion of cervical spine (ear to shoulder) and lateral flexion of thoracolumbar spine (35 degrees). Patient skin shown thick, tight, waxy skin mainly on the dorsal aspect of the hands.

2) Adhesive Capsulitis or Frozen Shoulder: Patients present with shoulder pain and inability to move shoulder. Symptoms persist for at least more than one month and gradually subside. Hallmark of disease is inability to move shoulder.

3) Flexor Tenosynovitis or Trigger Finger and De Quervain's Tenosynovitis: Diagnosis is based on presence of locking of affected finger, with symptoms of stiff hand, pain over distal palm and pain during movement of finger.

4) Dupuytren's Contracture Has Folowing Features: a palmar or digital nodule; tethering of palmar or digital skin; a pretendinous band and a digital flexion contracture, palpable thickening of the palmar fascia, with a flexor deformity of the second, third, fourth, or fifth fingers.

5) Charcot Joint or Neuropathic Arthropathy: Depending upon the stage of presentation there can be no symptoms to increased warmth, erythma, joint effusion and moderate to severe deformity can be there. WBC and ESR to help in distinguish between osteomyelitis and charcot arthropathy. Plain radiogram, MRI, bone scanning and doppler ultrasound to assist the diagnosis.

6) Carpal Tunnel Syndrome: It was defined as weakness or pain of the hand, evidence of thenar atrophy, or nocturnal paresthesia of the thumb, index, and long fingers. Signs of hoffmann-Tinel's or Phalen's, Carpal compression test and square wrist test. CTS was excluded if other causes, such as thyroid disease, acromegaly, or C5/C6 radiculopathy were suspected. History of surgery is also included in data.

7) Diabetic Amyotrophy: Was defined as wasting of the proximal upper or lower extremity muscles or the paraspinal muscles, preceded by severe pain and dyesthesia of the involved part.

8) Diffuse Idiopathic Skeletal Hyperostosis Syndrome: Was diagnosed based on the classification criteria set by Resnick and Niwayama, which requires radiographically recognized bridges connecting at least four contiguous vertebrae of the thoracic spine, with preservation of the intervertebral disk space and absence of apophyseal joints or sacroiliac inflammatory changes . Only those with back pain had an X-ray of the spine.

9) Diabetic Muscle Infarction: Was defined as a palpable painful mass with swelling and induration of the surrounding tissue without systemic symptoms, in addition to evidence of edema in the muscle on magnetic resonance imaging. A history of surgery for was also considered as evidence of the disease.

10) Reflex Sympathetic Dystrophy: Was defined as unilateral, localized, or diffused pain associated with swelling or trophic changes and vasomotor disturbance with impaired mobility of the affected limb.

11) Osteoarthritis: Presents as pain and tenderness in affected joint and decreased motion with crepitus. Xray may confirm the diagnosis with joint space narrowing, subchondral sclerosis (increased bone formation around the joint) and osteophytes.

Graph 1: Various manifestations in our study

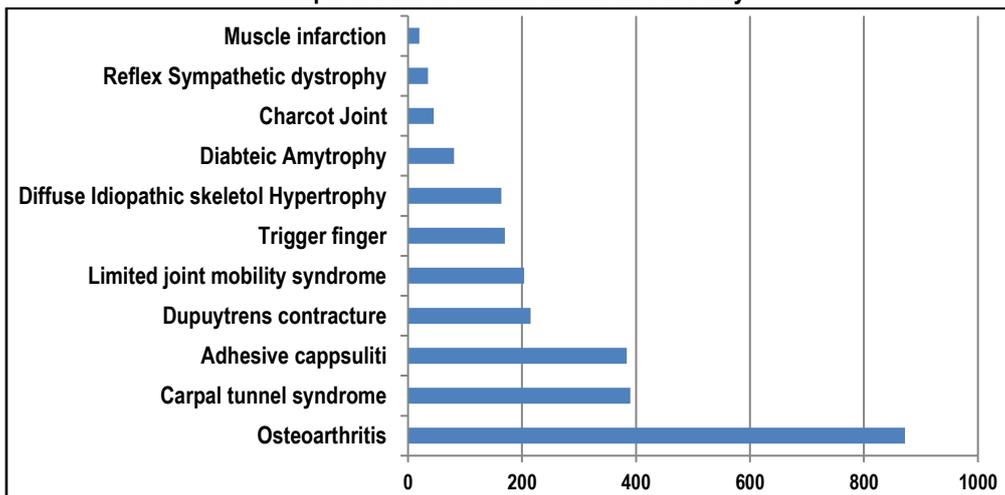
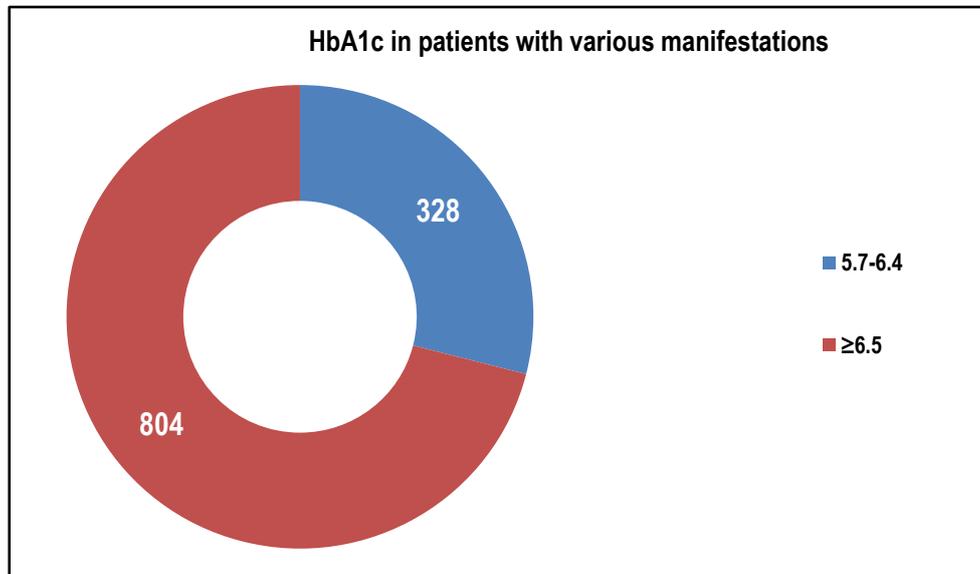


Table 1: Manifestations according to gender distribution

Sex	Manifestations present	Manifestations absent
Male	660	619
Female	472	459
Total	1132	1078

Graph 2: HbA1c and its relation in our study



RESULTS

We observed that Osteoarthritis was the most prevalent symptom in the all the articular and abarticular manifestations which was present in 865 patients. Osteoarthritis was present in 39% of total patients compared to 76% in all the patients with manifestation. Carpal tunnel syndrome was the second most common symptoms. Adhesive capsulitis is third most common manifestations in type 2 diabetic patients. Both manifestations are 390 and 384 respectively with overall percentage 18% and 17% in all the patients. Carpal tunnel and adhesive capsulitis are present in 34 % each of all patients with manifestations. Dupuytren’s contractures were fourth most common manifestations in 212 patients and 19% of patients with manifestation. Cheiroarthropathy (LJMS) was present in 204 patients (18% of patients with manifestations). Flexor tenosynovitis and DISH were present in 8.46% and 7.4% of all the patients (graph 1). Male dominated the female with ratio of 1.38 (table 1). Out of 2210 patients 1421 patients were having HbA1c either 6.5 or more than 6.5. While 789 patients of diabetes type2 were having HbA1c below 6.5 (graph 2).

DISCUSSION

Patients with Diabetes are prone to various associated disorders. Manifestations studied by us are mostly non inflammatory. Exact pathophysiology of these manifestations is far from clear even with the advance of medical science in last century. Various studies are being done worldwide as well as in India on musculoskeletal manifestation of diabetes and inter-study variation is quite evident from the gap in results of prevalence of these manifestations. This is mainly because most of these manifestations are clinically defined and there is no single

investigation, laboratory tests are also not available for them. Despite that there is general consensus between researchers that these manifestations are more prevalent in diabetic patients around the globe. Oxidative insult resulting from hyperglycemic state is considered as main reason for these manifestations. In our study we found that a total of 1132 patients with type 2 diabetics out of 2210 are suffering from any one of the manifestation or multiple manifestation. The overall prevalence of these manifestations is 51.2%. RP Agrawal et al⁴ in their study found that 57% of all diabetic patient are having same manifestations (type1 and type 2) which is similar to our study. Suzan Attar et al⁵ observed these manifestations at very low level in their study at only 17.8% that is may be due to very low sample size and inexperienced staff (data was collected by staff nurse). Most common manifestation is osteoarthritis in which is present in 39.4% of patients in all the patients. We included osteoarthritis of knee, RP Agrawal et al found it 36% of patient.⁴ Carpal Tunnel syndrome and Adhesive capsulitis are both present in approx 17% of patients. Halesha BR⁶ found it in 11 and 18% respectively while RP Agarwal et al⁴ found adhesive capsulitis in 22%. Duputren’s contracture is present in 10% of patients. Tariq Ahmed Bhat et al found it in 7% of patients.⁷ While RP Agrawal also found it in 7% of patients.⁴ Limited joint mobility syndrome also known as cheiroarthropathy was present in 10% of patients. It was in 18% of patient studied by RP agrawal.⁴ Trigger finger and de Quervain’s tenosynovitis is included together and they are present in 8.4 % of patients. Diffuse skeletal hypertrophy syndrome is present in 7.4% of patients. Which is present in 15% of patients in RP Agarwal study.⁴ Diabetic Amyotrophy was found in 3.6% of patients which is present in 4.8% of patient studied by Suzan Attar et al. Diabetic muscle infarction is present in 0.18% of patients similarly charcot

joint is present in 2.0% of patients and reflex sympathetic dystrophy is present in 1.5 % of patients.⁵ Last three findings are similar to other studies done elsewhere with least common prevalence. Our study have male to female ratio of 1:0.72 in favor of males. With p value of 0.59 no significant correlation is found with gender to various manifestations. Total males 58% in our study and females are 42%.

This was postulated by many researchers that poorly controlled glycemic state is a risk factor for various manifestations. We studied fasting blood sugar level and glycated hemoglobin (HbA1c). There is linear correlation found between these two and various manifestations. With increase in value of fasting blood sugar level and glycated hemoglobin number of manifestations also increases. 328 patients were having manifestations with control HbA1c between 5.6 to 6.4 or below. Most of our patients (804) having HbA1c more than 6.5. The correlation of HbA1c with the manifestations was found strongly correlated with p value of 0.0001. This is similar to various studies done in India. Sarkar et al and RP Agrawal also found similar results in their studies.⁸

CONCLUSION

Prevalence of diabetes is on rise with change in life style in India so are the complications of diabetes. Rheumatological manifestations of diabetes affect significant population. Known from more than century their exact mechanism and pathology is yet to understand completely. Osteoarthritis of knee, hip and spine was most common presenting manifestation in all cases studied. Carpal tunnel syndrome and adhesive capsulitis are next two major presenting manifestations. Good glycemic control can improve these manifestations as there was strong association between glycemic control and manifestations.

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