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PREVALENCE OF FROZEN SHOULDER AMONG PATIENTS WITH DIABETES IN GUJRANWALA: A CROSS-SECTIONAL STUDY

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Abstract

Aim: The aim of this study is to determine the frequency of frozen shoulder in individuals with diabetes mellitus and its correlation with various demographic and nondemographic factors. **Methods:** Patients with type 1 and type 2 diabetes were included in this study, which was conducted at the orthopedic department Gujranwala teaching hospital Gujranwala. Data about frozen shoulder was assessed, together with its demographic components, such as age, gender, length of diabetes, type of diabetes, and way of medication with a history of the disease in the family. To rule out frozen shoulder, the restriction in the capsular pattern of the shoulder (LAM) was examined. **Results:** Of the 150 patients, 115 (76.6%) reported having shoulder pain; females (73%) were more likely to have this condition. 87 (75.6%) of the 115 patients with shoulder pain were found to have frozen shoulder; this diagnosis was correlated with gender (p=0.010), the length of diabetes (p=0.01), HbA1c (p=0.044), and family history (p=0.04).

Conclusion: In conclusion, there is a correlation between diabetes mellitus and frozen shoulder, with female diabetics having the highest incidence.

Keywords: internal rotation, adhesive capsulitis, and diabetes mellitus.

INTRODUCTION

The hallmark of adhesive capsulitis, sometimes known as frozen shoulder, is gradual restriction of shoulder joint motion without any discernible radiographic abnormalities. Shoulder pain is a

common complaint, and many people report being unable to sleep on the afflicted shoulder. According to clinical classification, frozen shoulder occurs in three stages. The first stage, known as freezing, lasts between two and nine months and is characterized by moderate to severe shoulder discomfort and stiffness. The pain gets less severe but the rigidity in the shoulder gets worse. The disease's second stage, known as frozen, lasts between four and fourteen months. The third stage, known as "thawing," lasts for approximately five to twenty-four months during which the symptoms gradually start to lessen and the shoulder joint's restricted motion begins to heal. Frozen shoulder is more common in older adults; in two women, the disorder is 1.6 times more common 2.

Individuals who have experienced shoulder immobility due to mild upper limb trauma, surgery, overuse injuries, neurosurgery, or any systemic ailment such as diabetes mellitus, thyroid problems, 3-5 CVD, Dupuytren's contracture, or stroke are more likely to develop frozen shoulder. Six diffuse arthrofibrosis cases are caused by aberrant collagen deposition in the articular connective tissues and non-enzymatic glycosylation, which changes the mechanical characteristics of the tissues and matrix. Patients with diabetes are found to have musculoskeletal issues in both type 1 and type 2 populations, with frozen shoulder being the most common incidence. This 7–8 ailment manifests in both types of type 2 diabetes individuals, but more so in type 1. It occurs in diabetic people 2-4 times more frequently than in non-diabetics (9).

Individuals who have diabetes mellitus have aberrant collagen deposition in the glenohumeral joint's tendons and cartilage because more glucose molecules attach to the 10–12 collagen in these individuals. Both inflammation and fibrosis 13 have a significant part to play. This study was carried out at Gujranwala teaching hospital Gujranwala Pakistan, to determine the prevalence of frozen shoulder among diabetes patients undergoing diabetic outpatient care.

METHODOLOGY

People who were enrolled in the orthopedics OPD at Gujranwala teaching hospital Gujranwala were chosen for this cross-sectional study. Based on a 95% confidence interval and a 7% margin of error, Open Epi computed a sample size of 150. Every adult patient diagnosed with diabetes who is older than twenty. Participants in the study were all diabetic outpatient, regardless of their gender or type of diabetes. The Patients were chosen based on WHO criteria for HbA1c > 6.6%. Patients with diabetes who had a history of advanced cardiovascular disease, advanced lung disease, trauma, or stroke were not included in our study. The study was conducted between August 2023 and January 2024.

After obtaining consent, patients were evaluated using a questionnaire-based interview and an assessment of the shoulder capsular pattern, which is defined as uncomfortable and restricted shoulder joint movement during lateral, abduction, and medial rotation (LAM).

Statistical Analysis: SPSS version 22 was used to conduct the statistical analysis. The independent t-test and chi-square were used, with a p-value of less than 0.05 serving as the alpha threshold of significance.

RESULTS

There were 150 persons with type I and type II diabetes in total; 43(28.66) of them were men and 107(71.33) were women. Of the 150 patients, 115 (76.66%) reported shoulder pain, and 35 (23.33%) reported no pain at all (Table 1).

Table 01: Demographic data of patients

Total	Men	Female
150	43	107
Shoulder pain	Yes	No
	115	35

15 (13.0%) of the 115 participants who reported having shoulder discomfort did so in both shoulders, while 63 (54.78%) reported pain in the right shoulder and 37 (45.21%) in the left shoulder. Of the 115 patients, 98 (85.22%) had dominant right hand, and 17 (14.79%) had dominant left hand (Table 2).

Table 02: Data related to shoulder pain and discomfort

Category	Number of Participants	Percentage (%)
Total Participants with Discomfort	115	100
Discomfort in Both Shoulders	15	13.0
Discomfort in Right Shoulder	63	54.78
Discomfort in Left Shoulder	37	45.21
Dominant Right Hand	98	85.22
Dominant Left Hand	17	14.79

83 (72.17%) of the 115 patients with shoulder pain were diagnosed with frozen shoulder; of these, 13 (15.67%) were males and 84.33 % were females. Among the eighty-three individuals with frozen shoulder, five (6.02%) had type 1 diabetes, 78 (93.08%) had type II diabetes, 60 (72.29%) had a positive family history of the disease, and 23 (27.8%) did not.

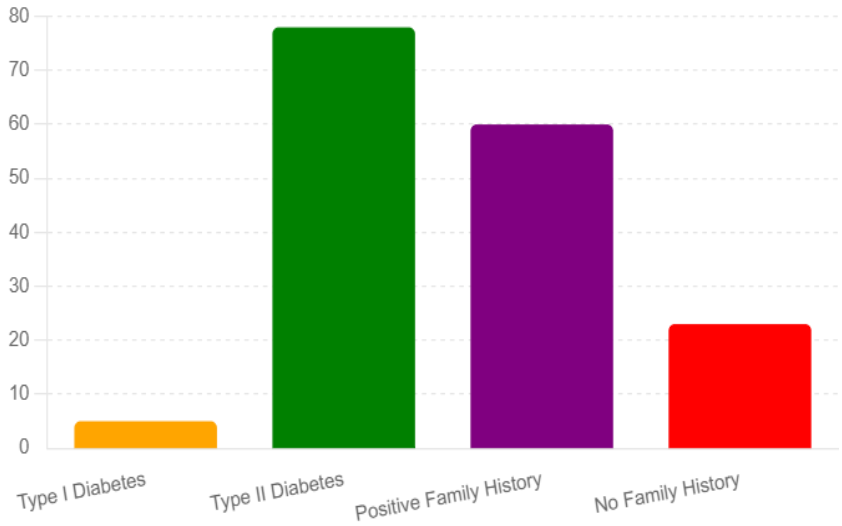

Table 03: Shoulder Pain and Associated Conditions Among Participants

Category	Number of Participants	Percentage (%)
Total Participants with Shoulder Pain	115	100
Diagnosed with Frozen Shoulder	83	72.17
- Males	13	15.67
- Females	70	84.33
Frozen Shoulder with Type I Diabetes	5	6.02
Frozen Shoulder with Type II Diabetes	78	93.08
Positive Family History of Frozen Shoulder	60	72.29
No Family History of Frozen Shoulder	23	27.8

DISCUSSION

Diabetes mellitus is associated with a number of musculoskeletal disorders, many of which are asymptomatic and 14 associated with the length of the disease and inadequate management. Because of hyperglycemia, the musculoskeletal system is impacted by diabetes in numerous ways. Connective tissue diseases, neuropathy, and vasculopathy, however, have a synergistic influence on the increasing occurrence of these problems in diabetes mellitus.

The results of this study showed that frozen shoulder was associated with gender, family history, HbA1c, and the length of diabetes, but not with age, type of diabetes, or drug administration. The prevalence of frozen shoulder in diabetes patients was reported to be 55.33% in this study; however, other investigations have found varying prevalence rates in this population. Furthermore, this represents the greatest recorded percentage of frozen shoulder among diabetes patients to date. In the current study, frozen shoulder was more common in women than in men. This outcome is comparable to one from a study where female participants had a higher prevalence of frozen shoulder (7). Additionally, there was a significant incidence in people with a positive family history of diabetes, and these results were consistent with those of 17 other studies. The majority of patients with frozen shoulder were observed to be using oral medicine, yet no correlation was observed between the type of drug and frozen shoulder. Additionally, there was no correlation discovered between age and frozen shoulder, and the majority of patients with right-sided frozen shoulder were right-handed. The study's sample size was modest, and it could have included additional variables. Our advice is to treat and manage this crippling condition, as treatment was not covered in the study.

CONCLUSION

Diabetes mellitus is linked to frozen shoulder and might further disrupt a patient's regular daily activities. The study found that individuals with diabetes who were primarily female had the highest percentage of frozen shoulder.

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