

Likelihood of Diabetes Mellitus Associated with Frozen Shoulder

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ABSTRACT

Background: Frozen Shoulder (FS), is an extremely debilitating shoulder condition that causes serious functional impairment in activities of routine work. FS causes disability in 2-3 percent of the population. Our study objective is to find the presence of diabetes in FS patients from Islamabad and Rawalpindi.

Patients and Methods: A cross sectional survey was carried out at Shifa Medical and Pain Clinic, involving 700 patients aged 18 or older who were experiencing shoulder pain or stiffness. The survey utilized a questionnaire to assess the presence of shoulder discomfort, diabetes, and its management. The statistical analysis was carried out using the SPSS.

Results: Data of 700 patients, 206(29.4%) males 494(70.6%) females with the mean age of 54±9. 287(41%) patients were found Diabetic with FS. 228(79.4%) diabetic patients were poorly controlled having HbA1c levels. The prevalence of diabetes in frozen shoulder was estimated as 41%. The high HbA1c levels showing a higher prevalence of uncontrolled Diabetes with Frozen shoulder

Conclusion: Frozen shoulder patients should be subjected to routine diabetes investigation and control should be monitored by blood glucose and HbA1c levels. Patients with diabetes should also be made aware of the role of glycemic control in the management of FS to prevent morbidity.

Keywords:

Frozen shoulder, Diabetes Mellitus, HbA1c

INTRODUCTION

Frozen Shoulder (FS), is a severely incapacitating shoulder ailment marked by discomfort and stiffness that limits shoulder joint movements. It is a prevalent yet misunderstood condition, challenging to characterize in terms of pathophysiology, etiology and management. For a very long time, clinicians have been attempting to describe and offer treatment regimens for frozen shoulders. It is thought that Duplay was the first to describe a painful, stiffening disease of the shoulder in 1872.¹

The term "frozen shoulder" was first used by Codman in 1934, while Neviasser coined the term "adhesive capsulitis" in 1945. The most prevalent shoulder disability, FS, has major functional ramifications for daily occupational activities.² Disability due to FS affects 2-3% of the population. Secondary FS emerges from recognized causes of immobility and stiffness, such as prior shoulder surgery or trauma, as well as various comorbidities.^{3,4} FS frequently affects patients who have particular medical

comorbidities, and it is frequently associated with these concomitant medical conditions' increased discomfort and dysfunction.⁵ Less research has been done in Pakistan in the past to describe the connection between diabetes and FS.

We hope to identify them, raise awareness among medical professionals and patients, and address the risk factors in order to lower morbidity through this study. We could attempt to determine whether inadequate glycemic management is linked to AC by measuring HbA1c levels, determining the duration of diabetes, and determining whether patients are taking insulin or oral hypoglycemic medications. The criteria that will be to diagnose AC shown in a Pal et al study is: (i) Pain in shoulder for minimum one month; (ii) An inability to sleep on the painful shoulder; and (iii) Restricted range of active and passive shoulder joint motion in three planes. Therefore, study objective was to find the presence of diabetes in frozen shoulder patients.

PATIENTS AND METHODS

A cross sectional survey was conducted on the patients with pain in shoulder or stiffness presenting to outpatients' settings at Shifa Foundation Clinic; Pain and specialist medical Clinic at Shifa International Hospital were recruited. The study duration was more than one year. Informed consent was obtained from

Conflict of interest: The authors declared no conflict of interest exists.

Citation: Zubair M, Saleem SA, Iqbal S, Durrani NA, Hasan N, Ali Hasan. Likelihood of Diabetes Mellitus Associated with Frozen Shoulder. J Fatima Jinnah Med Univ. 2023; 17(2):42-44.

DOI: <https://doi.org/10.37018/JFJMU/MUH/3622>

patients. A pretested questionnaire was used for the survey about the existence of shoulder pain and stiffness, diabetes, and its control. Both the patients identify that his or her answers were kept anonymous. Every patient had a unique code assigned to them, which only the researcher knew. Preventing complications and gaining a better grasp of the disease process could be advantageous for the participants.

To examine the shoulder joint, passive external rotation was quantified by for each shoulder. According to the definition, a frozen shoulder is characterized by pain lasting more than three months and a 50 percent reduction in external rotation relative to the unaffected shoulder. Data was gathered via a custom created survey. Questions about the existence, course, management, and control of diabetes were posed. HbA1c measurements were taken for every subject. HbA1c less than 7 was the WHO standard used to define blood sugar management.

Descriptive statistics were performed. For age and duration of diabetes, the mean and standard deviation were computed. Frequencies were obtained for qualitative variables. Statistical analysis was executed using SPSS 23.

RESULTS

Data of 700 patients, 206 (29.4%) males 494 (70.6%) females with an average age of 54±9.0 were reviewed. Table 1 depicts the gender distribution of the study population. Table 2 illustrates the pervasiveness of Diabetes in frozen shoulder patients. 228 (79.4%) patients' diabetes was poorly controlled having HbA1c levels of more than 7%. The patient had high HbA1c levels showing a strong correlation of uncontrolled Diabetes with Frozen shoulder. Glycemic Control as depicted by HbA1c levels in Diabetic Subjects with Frozen shoulder is shown in Table 3. 41% of patients

Table 1: Gender distribution of study population (n=700)

Patient's Information	Frequency (n)	Percentage (%)
Gender	Male	206
	Female	494
		29.4
		70.6

Table 2: Pervasiveness of Diabetes in patients with Frozen shoulder (n=700)

Patient's Information	Frequency (n)	Percentage (%)
Diabetes	Present	287
	Absent	413
		41
		59

Table 3: Glycemic Control in Diabetic Subjects with Frozen shoulder (n=287)

Patient's Information	Frequency (n)	Percentage (%)
HbA1c Levels	<7%	59
	7-10%	172
	<10%	56
		20.6
		59.9
		19.5

with frozen shoulder were incidentally diagnosed with diabetes.

DISCUSSION

This study showed that 41% of patients were found diabetic with FS visiting the medical and pain clinic OPD. 70.6 percent of patients were females with the average age of 54±9. 79.4% of diabetic patients had poor control of disease as depicted by HbA1c levels. 9.4% of patients with FS were incidentally diagnosed with diabetes. Frozen shoulder can occur spontaneously and seem to have no apparent reason, or it can be linked to systemic or localized illnesses. It mostly affects women in their 40s to 60s, which is quite consistent with our findings.⁶

Following the discovery that there was only a 2.3% incidence among 600 non-diabetic patients and a 10.8% prevalence among 800 diabetic patients, Bridgman initially identified a substantial link between diabetes and FS.⁷ Diabetes mellitus has also been linked to an increased chance of developing FS, according to Safron O et al.⁸ In the study by Maini S et al diabetes mellitus was prevalent in 36% of frozen shoulder patients and unsatisfactory glycemic control was observed in 61%.⁹ Our study results correlate with the findings and show a slightly higher prevalence of 41% and poor control in 79.4%.

Our study results also correlate with other studies regarding the pervasiveness of diabetes in FS patients. In 2008, Tighe and Oaklay reported the frequency of diabetes as 38.6% in patients with FS.¹⁰ Risk factors for a higher prevalence of frozen shoulder include feminine gender, diabetes mellitus, thyroid disorders, and hypercholesterolemia, according to Cho CH et al.¹¹ A recent meta-analysis found that people with diabetes mellitus had a 30% prevalence of the disease and that patients with diabetes are five times more likely to develop FS than non-diabetic patients.¹²

According to their HbA1c readings, 79.4 percent of patients with FS had poor diabetic control and 20.6 percent had good diabetic control. These findings are comparable to those of Justin et al, who found that individuals with uncontrolled blood sugar levels over an extended length of time have a higher risk of developing FS.¹³ Another study found that sugar control as measured by HbA1c is a significant factor in the development of musculoskeletal symptoms in type 2 diabetes mellitus.¹⁴ According to Moazma A et al., the prevalence of frozen shoulder in the diabetic population is high.¹⁵ These results are in accordance with our study findings.

The likelihood of frozen shoulder in patients with diabetes was 14.4% and no statistical association was established between gender and FS as described by Easmin AD.¹⁶ These results are in contrast to our study results as prevalence was low in their study.

Inayat F et al from their research estimated 41.3% prevalence of FS in diabetics from the sample of 80 patients residing in Lahore. Our study consisted of 700 patients from Rawalpindi and Islamabad. The results of our research are consistent with the study of Inayat F et al. the incidence of diabetes mellitus in patients with FS is 41%. High likelihood of FS in patients with diabetes can be accredited to poor glycaemic control our results are persistent with the results of Inayat F et al.¹⁷

CONCLUSION

The frozen shoulder patients should be routinely tested for diabetes, and their blood glucose and HbA1c levels should be monitored. Diabetic patients should also be taught the importance of maintaining adequate glycemic control in the management of FS to prevent morbidity.

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