JOURNAL OF WOMEN MEDICAL & DENTAL COLLEGE

Prevalence of Common Risk Factors of Adhesive Capsulitis in Abbottabad, Khyber Pakhtunkhwa, Pakistan

Fizza Rahman[1], Umber Fatima[1*], Hamid Ullah Shah[1], Mian Awais Ahmed[1]

[1]Women Institute of Rehabilitation Sciences, Abbottabad, Khyber Pakhtunkhwa, Pakistan.

Submission date 01-09-2022 **Published date** 24-12-2022

Abstract

This study was conducted to determine the prevalence of common risk factors among known cases of adhesive capsulitis in Abbottabad. Study was done on 253 patients selected through non-probability convenient sampling technique. Data was collected from Shaheena Jameel (Frontier) Hospital, Abbottabad, Ayub Medical Complex, Abbottabad and Physiotherapy Clinic of WIRS, Abbottabad and data was analyzed using SPSS version 27.0 and MS Excel 2010. This study showed that common risk factors of adhesive capsulitis were Diabetes Mellitus (29.2%), cardiac disease (14.2%), Stroke (12.4%), history of immobilization of shoulder joint (13%), upper limb neuropathies (8.3%), thyroid disorders (7.1%), chronic obstructive pulmonary disease (6.3%), having two or more comorbidities or risk factors (4%) and idiopathicity (5.5%). This study showed that 56.5% patients got PT treatment. This study concluded that systemic conditions, neurological diseases and immobilization were more prevalent risk factors of adhesive capsulitis in patients attending hospitals of Abbottabad. In small number of people, adhesive capsulitis was labeled idiopathic. Prevalence of usage of physiotherapy treatment was quite high among the patients of adhesive capsulitis.

Keywords Adhesive Capsulitis (Frozen Shoulder), Physiotherapy Treatment, Prevalence, Risk Factors

1. Introduction

"Adhesive Capsulitis" or "Frozen Shoulder" was first recognized as being distinct from glenohumeral arthritis in 1872 by Duplay (1). Codman introduced the term "Frozen Shoulder" in 1934 as painful loss of shoulder motion with normal radiographic studies, clinically presented as slow onset of shoulder pain, lack of ability to sleep on the involved side, restricted movements at glenohumeral joint. The term "Adhesive Capsulitis" was devised by Naviesar in 1945, theorizing that this pathology results from thickening and contracture of the glenohumeral capsule. Patients with diagnosis of adhesive capsulitis are commonly seen in physiotherapy, orthopedic, and physical medicine departments or hospitals (2). Cyriax suggested that inflammation of the glenohumeral joint capsule and resultant limitations of motions occur in a predictable pattern called "capsular pattern" in which the external rotation is the first and most compromised motion, followed by abduction and internal rotation while flexion of shoulder joint is the least limited motion (3). The prevalence of adhesive capsulitis is approximately 2-5% in general population. The disorder mostly occurs in persons aged 50-60 years with the maximum occurrence in the middle of fifth decade of life. The condition rarely affects the population before age of 40 years (4). Adhesive capsulitis is more common among females and the left or non-dominant shoulder is usually more involved than the right or dominant shoulder.

Corresponding author at: Umber Fatima
Email address: Umber.fatima11@gmail.com

https://doi.org/10.56600/jwmdc.v1i3.33

Studies suggest that almost 40% of patients develop persistent but mostly mild symptoms of shoulder pain and some functional limitations while long term disability may result in 15% of patients (5). The autoimmune system was proposed as etiological agent but conclusive evidence had not been found. Frozen shoulder often develops without a known reason. There is higher than normal association between adhesive capsulitis and diabetes mellitus (6). Other risk factors that contribute to adhesive capsulitis include rotator cuff tears, shoulder injury, hypo and hyperthyroidism, chronic obstructive pulmonary disease, cerebrovascular accident, myocardial infarction, post-traumatic or post thoracic surgery prolonged immobilization of shoulder joint (7). Some investigators state that the psychological disorders such as depression (28.2%) and emotional stress (24.2%) also contribute to Adhesive Capsulitis (8). Treatment options for this condition include oral analgesics, NSAIDS, intra-articular injection, manipulation under anesthesia, capsular release, hydro dilation and distension arthrography. Non operative interventions include patient education, physiotherapy modalities (TENS, Ultrasound), stretching exercises and joint mobilization (9). The aim of this study was to determine the prevalence of common risk factors for adhesive capsulitis in Abbottabad, KPK, Pakistan.

2. Materials and Methods

This was descriptive cross-sectional survey conducted in a period of six months (From October 2021 to March 2022). Data was collected from Shaheena Jameel (Frontier) Hospital, Abbottabad, Ayub Medical Complex, Abbottabad and Physiotherapy Clinic of Women Institute of Rehabilitation Sciences, Abbottabad through non-probability convenient sampling technique. Estimated sample size was 377 as calculated by Raosoft software.

Study population consisted of known cases of adhesive capsulitis which were already diagnosed by orthopaedic doctor or physiotherapist in the respective healthcare setting. The actual data collected was 253. Study included the patients above the age of 40 years. Both male and female patients having frozen shoulder were recruited in this study.

Primary data was collected by using questionnaire taken from previous researches (10,13,16). As questionnaire included medical terms as thyroid disorder, COPD and neuropathies, so the patients were made to understand the various risk factors mentioned in questionnaire by telling the layman terms of these risk factors. Presence of Risk factors was further confirmed and verified by presenting the same questionnaire to the medical practitioner (orthopaedic doctor) or physical therapist already attending the patient to remove any doubt or ambiguity. Data was analysed using SPSS version 27.0 and MS Office Excel 2010 software. Frequencies were calculated to determine the prevalence of common risk factors of adhesive capsulitis.

Informed consent was taken from the participating subjects. Topic of study was approved by research ethical committee of Women institute of rehabilitation sciences, Abbottabad. Subjects' responses were kept confidential and were only used for research purpose. No one was excluded from the study because of gender or race.

3. Results

Pie chart in figure 1 shows that frozen shoulder was more prevalent among females 144 (57%) as compared to males 109 (43%).

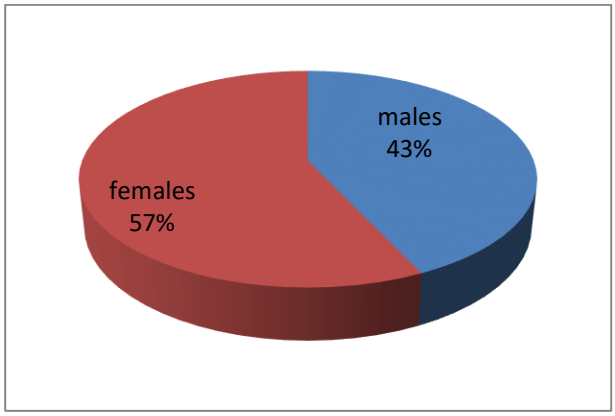

Figure 1: Gender distribution of patients with adhesive capsulitis

Table 1 shows that patients in age group of 51-60 years were more affected with adhesive capsulitis (47.4%) as compared to those in age group of 40-50 years (38.3%). Patients in age group of 61 to 70 years were least affected with Adhesive capsulitis (14.2%).

Table 1: Age of patients of adhesive capsulitis

Age in years	Frequency	Percent
40 to 50 years	97	38.3
51 to 60 years	120	47.4
61 to 70 years	36	14.2

Total	253	100.0

Bar Chart in figure 2 shows the prevalence of common risk factors of adhesive capsulitis. Frozen shoulder was found to be prevalent among patients having DM (29.2%), cardiac disease (14.2%), Stroke (12.4%), history of immobilization of shoulder joint (13%), upper limb neuropathies (8.3%), thyroid disorders (7.1%), COPD (6.3%) and having two or more comorbidities or risk factors (4%). In 14 patients (5.5%), frozen shoulder was labeled as idiopathic.

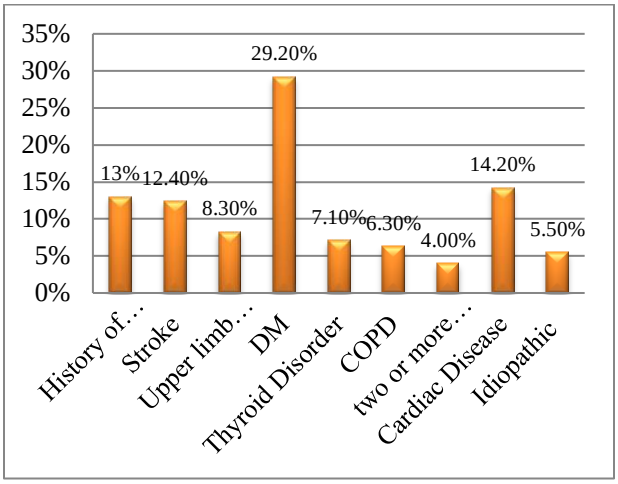

Figure 2: Prevalence of common risk factors of adhesive capsulitis

Table 2 shows that 8 (3.3%) patients of adhesive capsulitis had history of post-thoracic surgery immobilization, 25 (9.8%) patients had previous history of immobilization after shoulder injury and 220 (86.9%) were not previously immobilized.

Table 2: History of immobilization of shoulder joint

History of immobilization of Shoulder Joint	Frequency	Percent
Post Thoracic surgery Immobilization	8	3.3
Post-traumatic shoulder immobilization	25	9.8
Not immobilized (RF other than Immobilization)	220	86.9
Total	253	100

Pie chart in figure 3 shows that 57% patients of adhesive capsulitis were receiving Physiotherapy (PT) treatment and 43% patients had not received physiotherapy treatment for their condition.

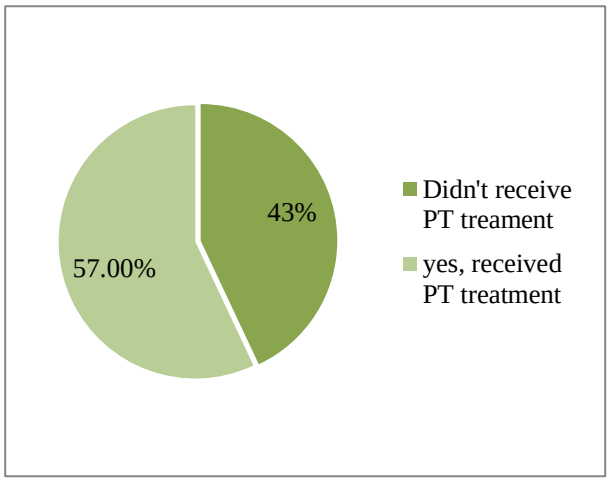

Figure 3: Trend of seeking physiotherapy treatment for adhesive capsulitis

4. Discussion

This study showed that common risk factors of adhesive capsulitis were Diabetes Mellitus (29.2%), cardiac disease (14.2%), Stroke (12.4%), history of immobilization of shoulder joint (13%), upper limb neuropathies (8.3%), thyroid disorders (7.1%), chronic obstructive pulmonary disease (6.3%), having two or more comorbidities or risk factors (4%) and idiopathicity (5.5%).

Milgrom C., et al. (2008) concluded that adhesive capsulitis was the most common condition among patients of diabetes mellitus (29.4%) and thyroid disorder (13.5%) (10). Zhu Y., et al. (2013) reported 10% prevalence of adhesive capsulitis in stroke patients (11). The present study showed that 29.2% subjects of adhesive capsulitis were having DM, thyroid disorder was present in 7.1% and 12.4% participants had stroke. So the results of present study are consistent with the above mentioned studies.

Yang S. et al. (2017) reported adhesive capsulitis among post-mastectomy females (10.8%) aged 50-59 years (12). The present study showed that 13% patients of adhesive capsulitis had history of immobilization of shoulder joint (3.3% after thoracic surgery and 9.8% after shoulder injury). Binder A. et al. (1986) said that adhesive capsulitis was more prevalent among women (70%) (13). Present study also showed higher prevalence of frozen shoulder among females (57%). Occurrence of frozen shoulder increased by 2% more among persons after age of 40 years as reported by French P et al. (1959) (14). In the present study, patients

in age group of 51-60 years were more affected with adhesive capsulitis (47.4%) as compared to those in age group of 40-50 years (38.3%).

Hakim AJ et al. (2003) found prevalence of primary or idiopathic adhesive capsulitis as 42% (15). In present study, 14 patients (5.5%) of frozen shoulder were labeled with idiopathic adhesive capsulitis. So the results of present study are inconsistent with the results of the above mentioned study.

Selley et al. (2019) reported that systemic conditions are contributing factors for adhesive capsulitis (diabetes 14.9%, chronic obstructive pulmonary disease 2.4%, and congestive heart failure 0.1%) (16). In the present study, 29.2% patients of adhesive capsulitis were suffering from DM, 14.2% were having cardiac disease and COPD was present in 5.5% subjects. So the present study showed higher prevalence of systemic conditions in patients of adhesive capsulitis than the above mentioned study.

This study was sample based cross-sectional survey to determine prevalence of risk factors in patients of adhesive capsulitis. The study also determined the prevalence of usage of physiotherapy treatment in patients of adhesive capsulitis and was conducted on small sample size as all hospitals of Abbottabad were not included. This study did not determine the prevalence of three stages of frozen shoulder with associated risk factors separately.

5. Conclusions

This study concluded that systemic conditions, neurological diseases and history of immobilization were more prevalent risk factors of adhesive capsulitis in patients of known cases of frozen shoulder attending hospitals of Abbottabad. Lesser number of patients had frozen shoulder without any known cause or risk factor. Majority of subjects of adhesive capsulitis were receiving physiotherapy treatment for their condition.

Recommendations Further studies can be conducted on a larger sample size to determine the prevalence of other risk factors like depression, Dupuytren's contracture and cervical spondylosis contributing to development of frozen shoulder. In future, prospective cohort studies can be conducted to establish the association between etiological risk factors and adhesive capsulitis. Future studies can be conducted to determine the presence of risk factors with different pathological stages of frozen shoulder.

Acknowledgement We Thank the WIRS to provide a friendly environment to collect data from various institutes.

Conflict of Interest There is no conflict of interest. All the authors have approved the manuscript

References

1. Reeves B. The natural history of the frozen shoulder syndrome. Scand J Rheumatol. 1976;4:193-196.

2. Dias R, Cutts S, Massoud S. Frozen shoulder. BMJ. 2005 Dec 17;331(7530):1453-6.

3. Cyriax JH. Textbook of Orthopaedic Medicine: Diagnosis of Sofi Tissue Lesions, 6th ed. Baltimore, MD: Williams & Wilkins; 1975.

4. https://www.rajbaidyaayurveda.com/frozen-shoulder/ accessed on 13th March 2021

5. Kelley, M et al (2009). Frozen shoulder: evidence and a proposed model guiding rehabilitation. JOSPT, 2009; 39(2): 135-148.

6. Doria C, Mosele GR, Badessi F, Puddu L, Caggiari G. Shoulder Adhesive Capsulitis in Type 1 Diabetes Mellitus: A Cross-Sectional Study on 943 Cases in Sardinian People. Joints. 2017 Aug 24;5(3):143-146.

7. Minter W.T. The shoulder-hand syndrome in coronary disease. J Med Assoc Ga. 1967;56(2):45–49.

8. Ding, Huairong & Tang, Yanming & Xue, Yuan & Yang, Zhong & Li, Zhiyang & He, Dong & Zhao, Ying & Zong, Yaqi. A report on the prevalence of depression and anxiety in patients with frozen shoulder and their relations to disease status. Psychology, health & medicine. 2014: 19(6).

9. D'Orsi GM, Via AG, Frizziero A, Oliva F. Treatment of adhesive capsulitis: a review. Muscles Ligaments Tendons J. 2012 Sep 10;2(2):70-8.

10. Milgrom C, Novack V, Weil Y, Jaber S, Radeva-Petrova DR, Finestone A. Risk factors for idiopathic frozen shoulder. Isr Med Assoc J. 2008 May;10(5):361-4.

11. Zhu Y, Su B, Li N, Jin H. Pain management of hemiplegic shoulder pain post stroke in patients from Nanjing, China. Neural Regen Res. 2013 Sep 5;8(25):2389-98.

12. Yang, S., Park, D.H., Ahn, S.H. et al. Prevalence and risk factors of adhesive capsulitis of the shoulder after breast cancer treatment. Support Care Cancer. 2017: 25, (1317–1322).

13. Binder A., Bulgen D.Y., Hazelman B.L.et al. Frozen shoulder: a long-term prospective study. Ann Rheum Dis. 1986; 43: 288-292

14. Lloyd-Roberts G., French P. Periarthritis of the shoulder: a study of the disease and its treatment. BMJ. 1959; 1: 1569-1574

15. Hakim AJ, Cherkas LF, Spector TD, MacGregor AJ. Genetic associations between frozen shoulder and tennis elbow: a female twin study. Rheumatology (Oxford). 2003 Jun;42(6):739-42.

16. Selley RS, Johnson DJ, Nicolay RW, Ravi K, Lawton CD, Tjong VK, Terry MA. Risk factors for adhesive capsulitis requiring shoulder arthroscopy: A clinical retrospective case series study. J Orthop. 2019 Nov 26;19:14-16.