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Management of Patients with Frozen Shoulder: Scope and Limitation in Bagerhat District Hospital, Bangladesh

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Abstract

Background: Frozen shoulder is a troublesome condition in Orthopaedic practice, most often of unknown aetiology. Standard treatment includes medical treatment, physiotherapy and intra-articular corticosteroid injection. The prognosis depends on several clinical factors and modality of treatment. **Objective:** This study aimed to assess the outcome of patients with frozen shoulder by different modalities of treatment in 250 Bedded Bagerhat District Hospital. **Methods:** This was an analytic cross-sectional study with a total number of 220 cases of frozen shoulder in 250 Bedded Bagerhat District Hospital, Bangladesh. The study period was from January 2017 to April 2023. The study population was selected by convenient purposive sampling based on inclusion and exclusion criteria. Ethical clearance was taken from the Ethical Review Committee of 250 Bedded Bagerhat District Hospital. The study population was divided into two sub-groups. Group A: 110 patients who were managed by only medical treatment; Group B: 110 patients who were managed by intra-articular corticosteroid injection in addition to the medical management. **Results:** Here, 69.1% and 59.1% of patients of groups A and B were female, respectively. Majority of the patients were in the 31-40 years age group (32.7% and 36.4% in respective groups). Mean±SD of age was 35.6±8.2 and 33.5±7.5 years in the respective groups. Most of the patients in both groups were housewives and housemaids. Results were more remarkable in group B in terms of pain and disability. Visual Analogue Score (VAS) and Shoulder pain and disability index (SPADI) were used as the assessment tool here. At least 06 months of follow-up was done in each patient. The relapse rate was significantly lower in group B than in group A in 6th month. **Conclusion:** Based on pain, disability, and relapse rate, responsiveness was higher in patients receiving intra-articular corticosteroid injection along with medical treatment and physiotherapy than in medical treatment and physiotherapy alone.

Keywords: Frozen shoulder, Occupational association, Intra-articular corticosteroid

Introduction

Frozen shoulder is often considered as a frustrating condition both for Orthopaedic surgeons and patients. No clear cause has yet been found for the idiopathic type of frozen shoulder. Treatment of this condition is difficult and can result in misleading outcomes.[1] Medical treatment and physiotherapy are effective options for frozen shoulder. In selective cases, intra-articular steroids may have a good therapeutic role.[1]

In many researches, the prevalence rate usually varies. In a study, the prevalence rate was 2% in the general population.[2] It affects persons older than 40 years[3] of age more commonly, and 70% of patients presenting with a frozen shoulder are women.[4] The condition affects diabetic (type 1) patients more often than healthy ones, with a prevalence of almost 11% in this population group.[5] Griggs et al[6] suggested with their results that female patients who do not have an intrinsic emotional, psychological or personality disorder can overcome adhesive capsulitis better than those who do. The pathophysiological process is believed to involve synovial inflammation and fibrosis of the shoulder joint capsule.[7]

Literature review suggests that the frozen shoulder has four different clinical stages; inflammatory phase,

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freezing phase, frozen phase and thawing phase.[1] Clinical feature usually varies according to the phase of presentation.[8] Treatment options for frozen shoulder include medical management, physiotherapy and intra-articular corticosteroid injection.[9] Oral non-steroidal anti-inflammatory medication can be initiated in patients who present with a painful limited range of motion during the painful freezing phase.[10]

It is suggested in the literature that an intra-articular injection has better pain relief than physiotherapy, analgesics or placebo.[11] In our study, we are going to evaluate the responsiveness of intra-articular steroid injection along with medical treatment and physiotherapy in contrast to that of medical treatment and physiotherapy alone.

Materials and methods

This study was conducted as an analytic cross-sectional study with a total number of 220 cases of frozen shoulder in 250 Bedded Bagerhat District Hospital, Bangladesh from January 2017 to April 2023. The study population was selected by convenient purposive sampling based on inclusion (patients with frozen shoulder, age in between 15 to 75 years age, and patients with no congenital abnormality were included); and exclusion criteria (patients with severe co-morbidities, patients with terminal care, liver failure, renal failure were excluded). All patients were divided into two sub-groups. Group A: 110 patients with frozen shoulder who were managed by only conventional medical treatment; Group B: 110 patients who were managed by intra-articular corticosteroid (Triamcinolone) injection in addition to the conventional medical management. At least 06 (six) months follow-up was done in each patient. The survey data were analyzed using descriptive statistics, such as mean±SD, percentage etc. Informed consent was taken individually from the patient and ethical clearance was taken from the Ethical Review Committee of 250 Bedded Bagerhat District Hospital. Visual Analogue Score (VAS) and Shoulder pain and disability index (SPADI) were used as the assessment tool in this study to analyze the outcome.[9,10]

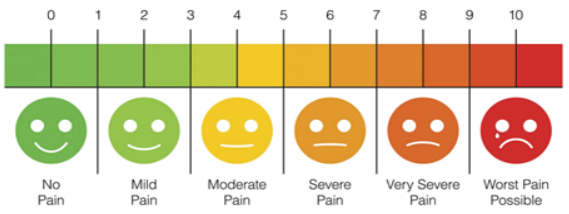

Figure 01: Visual Analogue Score (VAS)[12]

Shoulder pain and disability index (SPADI): Integrated pain and disability score[13]

Table 01: Pain scale[13]

(How severe the pain is?)

Indicators	0	1	2	3	4	5	6	7	8	9	10
At its worst?											
When lying on the involved side?											
Reaching for something on a high shelf?											
Touching the back of your neck?											
Pushing with the involved arm?											

Table 02: Disability scale[13]

(How much difficulty does the patient have?)

Indicators	0	1	2	3	4	5	6	7	8	9	10
Washing your hair?											
Washing your back?											
Putting on an undershirt or jumper?											
Putting on a shirt that buttons down the front?											
Putting on your pants?											
Putting an object on a high shelf?											
Carrying a heavy object of 10 pounds (4.5 kg)?											
Removing something from your back pocket?											

Results

In group A, 30.9% (34) patients were male and 69.1% (76) patients were female; whereas, in group B, 40.9% (45) patients were male and 59.1% (65) patients were female.

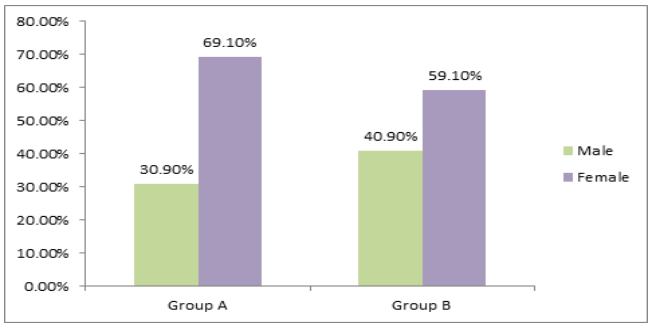

Figure 02: Sex distribution of the study participants

Mean±SD of age was 35.6±8.2 and 33.5±7.5 years respectively in groups A & B. The Majority of the cases were 31-40 years of age in both groups (32.7% and 36.4% in respective groups).

Table 03: Age distribution of patients with frozen shoulder

Age (in years)	Group A			Group B		
	N	%	Mean±SD	N	%	Mean±SD
<20	06	5.5	35.6±8.2	11	10.0	33.5±7.5
21-30	13	11.8		15	13.6	
31-40	36	32.7		40	36.4	
41-50	28	25.5		22	20.0	
51-60	16	14.5		17	15.5	
>60	11	10.0		05	4.5	
Total	110	100		110	100	

Regarding the occupation of the study patients, 30.0% (33) of patients in group A and 25.5% (28) of patients in group B were housewives. Frozen shoulder was also common in housemaids (18.1% and 22.7% in respective groups).

Table 04: Occupation of the study patients

Occupation	Group A		Group B	
	N_1	%	N_2	%
Housewife	33	30.0	28	25.5
Housemaid	20	18.1	25	22.7
Day labourer	15	13.6	16	14.5
Farmer	17	15.5	22	20.0
Player	03	2.7	02	1.8
Student	12	10.9	10	9.1
Others	10	9.1	07	6.4
Total	**110**	**100**	**110**	**100**

Conventional medical treatment and physiotherapy were given to patients in Group A; and in Group B, intra-articular corticosteroid injection (Triamcinolone) was given in addition to conventional medical treatment and physiotherapy. Visual analogue scale (VAS) was another assessment tool for evaluation of pain and follow-up in both study groups (where score 0 is no pain and score 10 is severe intractable pain).[12]

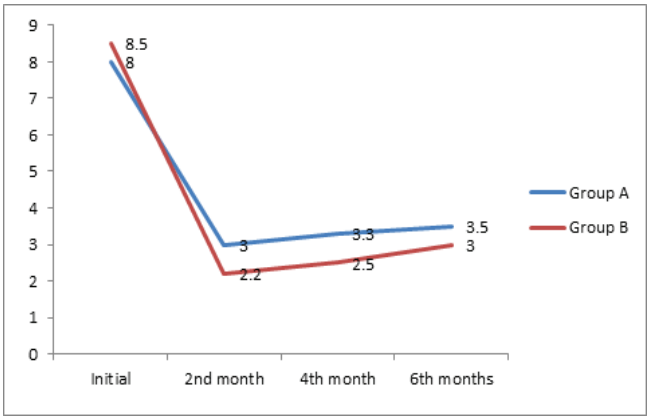

Figure 03: Assessment of pain in follow-up (using VAS)[12]

Shoulder pain and disability index (SPADI) was used in this study as an assessment tool which consisted of pain score and disability score.[13] Pain and disability score was used for evaluation of pain in follow-up in both groups (where score 0 is no pain and score 10 is severe intractable pain).[13]

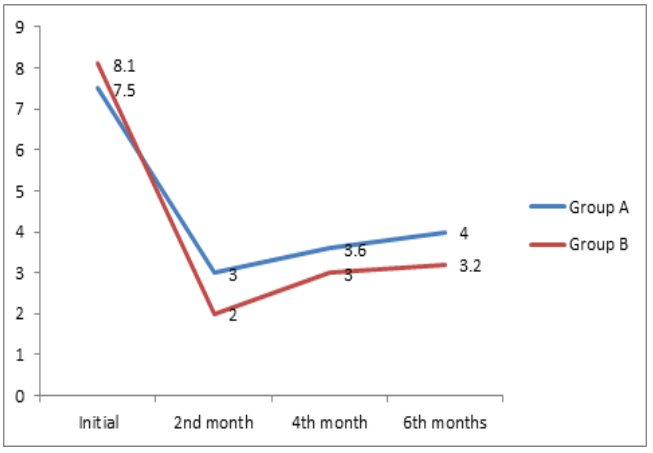

Figure 04: Assessment of pain & disability in follow-up (Shoulder pain and disability index-SPADI)[13]

The incidence of relapse was relatively higher in the case of Group A in contrast to Group B. Overall relapse rate is represented in Table 05.

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Table 05: Relapse rate in both study groups

Follow up	Group A		Group B	
	N_1	%	N_2	%
2nd month	10	9.1	04	3.6
4th month	15	13.6	05	4.5
6th month	18	16.4	09	8.2

One of the major drawbacks of treatment and follow-up of patients with frozen shoulder was that the overall dropout rate was indeed very high at this district-level hospital (Figure 05).

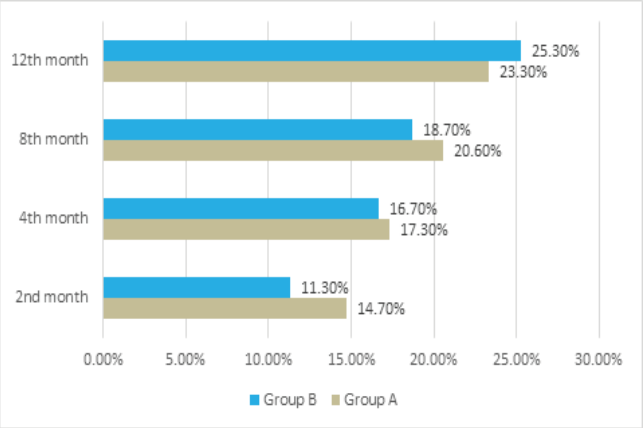

Figure 05: Dropout rate in both study groups in 12th month follow-up

Discussion

The majority of the patients with frozen shoulder were female in this study. 69.1% and 59.1% patients of in groups A and B were female, respectively. Peak incidence was seen in 31-40 years of age in both study groups (32.7% and 36.4% in respective groups). 25.5% and 20.0% of patients in groups A & B were 41-50 years of age. Mean±SD of age was 35.6±8.2 and 33.5±7.5 years respectively in both groups. In many studies, it has been suggested that frozen shoulder mainly affects individuals 40–60 years of age, with a female predominance. The exact incidence and prevalence of frozen shoulder are unknown, but various authors have quoted figures of 2%–5% in the general population.[14,15] Occupation may have a relation with frozen shoulder. Most of the patients in both groups were housewives and housemaids. In group A, 30.0% (33) patients were housewives; whereas in group B, 25.5% (28) patients were housewives. 18.1% (20) and 22.7% (25) patients of respective groups were housemaid. Incidence was also high in day labourers and farmers. However, the occupational relationship was not suggested in most of the research.[1]

Pain tends to fall after treatment (using the VAS). The highest response rate was seen at 2 months following treatment. Thereafter, pain trends increase slightly in both study groups. A better response rate in terms of pain was observed in the case of group B in contrast to group A (using the VAS). A similar response rate was observed in terms of pain and disability. The shoulder pain and disability index (SPADI) was used to assess the pain and disability in patients with frozen shoulder. A better response was seen in 2nd month in both groups; however good result was observed in group B. The relapsing rate was significantly higher in Group B than in Group A. In 6th month, the relapsing rate was 16.4% (18) in group A; whereas, in group B, it was 8.2% (09). The best and optimal outcome has been observed with intra-articular steroid injection in patients with careful selection. Most of the research suggests that the effectiveness of intra-articular corticosteroid injection is relatively better than medical treatment and physiotherapy alone in terms of pain and disability.[17] In the majority of the studies, the recurrence rate varied greatly.[16] However, recurrence in the case of frozen shoulder is a rare situation as depicted in some studies.[12]

A higher dropout rate was observed in both study groups. The facility of physiotherapy is limited in district-level hospitals. Many patients are poor and illiterate. These factors may have an impact on the high relapse rate in patients with frozen shoulder in our hospital.

Conclusion

The frozen shoulder was commonly observed in female patients of the fourth decade. Peak incidence may have an occupational relation. Incidence was significantly higher in housewives and housemaids. A better result was seen with intra-articular steroid injection in selective patients in terms of pain, disability and relapse rate.

Conflict of interest

The authors declare no conflict of interest.

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