

Outcome of intra-articular corticosteroid in the treatment of chronic adhesive capsulitis

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Abstract

Objective: To compare the mean pain and disability scores prior to and after intra-articular shoulder joint corticosteroid injection in patients with chronic adhesive capsulitis.

Study design: Quasi experimental

Place and duration of study: Orthopaedic unit, Lady Reading Hospital, Peshawar from 3rd February 2016 to 3rd August 2016.

Material and Methods: A total of 220 patients were observed. Patients were injected intra-articular corticosteroid. Methylprednisolone (80 mg) and 1 ml lignocaine 2% were given in combination. Patients were discharged with proper physiotherapy instructions and called after one month for follow up. SPADI score was recorded at follow up.

Results: The mean age was 49 ± 9.38 years. Mean baseline SAPDI score was 81.31 ± 72.8 while the final SAPDI after 4 weeks was 19.52 ± 5.74 so the change in SAPDI after 4 weeks was 61.79 ± 11.81 .

Conclusion: The mean SPADI score after shoulder joint corticosteroid injection among patients with adhesive capsulitis is better than baseline.

Keywords: Adhesive capsulitis, Intra-articular injection, Outcome, shoulder pain and disability index (SPADI) score

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Introduction

Adhesive capsulitis is a disease of progressive pain and stiffness of the shoulder joint which spontaneously resolves after one and half year.¹ 3% of general population suffer from Chronic Adhesive Capsulitis.² It is more common in female gender, diabetics and those having cardiac diseases.³ According to Naviasor (1945); it was a chronic inflammatory condition while Lundberg (1969) suggested that the condition was associated with fibrosis and fibroplasias.⁴ Treatment options varies from non-operative i.e. NSAIDs, oral steroids, range of motion exercises, steroids injection into the joint, manipulation under anaesthesia (MUA) and Hydraulic distension (HD).⁵

Injection of steroid into the shoulder joint is a

very common procedure. There is still debate as to the efficacy of corticosteroid injections in the treatment of adhesive capsulitis. While the complete patho-physiology of adhesive capsulitis is still unclear, the anatomical location of the pathology lies in the gleno-humeral joint.⁷ The accuracy of blind corticosteroid injections into the gleno-humeral joint is still unclear.⁸

In one study, using shoulder pain and disability index (SPADI) baseline subscale pain was 81 ± 7.2 which improved to 14.5 ± 7.4 at 4th week of intra-articular corticosteroid injection in the affected glenohumeral joint. The mean baseline SPADI subscale disability score was 79.5 ± 7.6 which improved to 25.6 ± 18.2 at 4th week of intra-articular injection in the affected glenohumeral joint. The mean overall SPADI

Table-1: Age distribution (n = 220)

Age (years)	No.	%
20 – 40	48	22.0
41 – 60	172	78.0
Mean±SD	49.0±9.38	

Table-2: Gender distribution (n=200)

Gender	No.	%
Male	88	40.0
Female	132	60.0

Table-3: Duration of Adhesive capsulitis (n=200)

Duration (month)	No.	%
≤ 1	73	33.0
> 1	147	67.0
Mean±SD	1.2±2.37	

Table-4: Baseline SPADI score vs follow up SPADI score (n=220)

Variable	Baseline SPAID score	Follow-up SPAID score	P. Value
SPADI Score	81.31±7.28	19.52±5.47	0.0001

Table-5: Stratification of mean change in SPADI score according to age (n = 220)

SPADI Score	20–40 years (n=48)	41–60 years (n=172)	P Value
Mean change	61.80±1.83	62.34±2.02	0.0963

Table-6: Stratification of mean change in SPADI score according to age (n = 220)

SPADI Score	20–40 years (n=48)	41–60 years (n=172)	P Value
Mean score	62.88±2.01	62.94±2.04	0.8300

Table-7: Stratification of mean change in SPADI score according to duration of Adhesive capsulitis (n=220)

SPADI Score	≤1 month (n=73)	>1 month (n=147)	P Value
Mean change	62.92±1.59	62.81±2.02	0.6981

score at baseline was 80.3±9.8 which improved to 19.9±5.3 at one month of steroid injection.⁹ In another study among patients with adhesive capsulitis, the mean pain on VAS at baseline was 7.1±1.8 which reduced to 5.1±1.7 at 4th week of intra-articular steroid injection. In the similar study, the mean range of motion steroid inject (extension) at baseline was 34.4±7.4 which improved to 41.6±6.3 at 4th week of intra-articular steroid injection.¹⁰

Material and Methods:

This quasi experimental study was carried out at Department of Orthopaedic, Lady Reading Hospital, Peshawar from 3rd February 2016 to 3rd August 2016 and comprised 220 patients. All patients with newly diagnosed chronic Ad-

hesive capsulitis with minimum SPADI score of 40 at baseline, either gender and age group 20-60 years were included. Patients with previous surgical intervention on the same shoulder, history of recent fracture of humerus, rheumatoid arthritis and 2 Local skin infections and osteomyelitis detected clinically or radiologically were excluded. Diagnosis of Adhesive capsulitis was based upon thorough history and proper physical examination regarding pain and disability scoring system. The radiographs of all the patients were taken to exclude any other cause of shoulder pain and stiffness. The purpose and benefits of the study was explained to the patient and the patient was explained that this research study was done purely for research and data publication and a written informed consent was obtained. Patients were injected intra-articular corticosteroid. Methylprednisolone (80mg) and 1ml lignocaine 2% were given in combination. Patients were discharged with proper physiotherapy instructions and called after one month for follow up. SPADI score was recorded at follow up. Data was entered in software SPSS version 23. Student's t test was used to compare the baseline and follow up SPADI scores and P value ≤0.05 was considered significant.

Results:

48(22%) patients were in age range 20-40 years, 172(78%) patients were in age range 41-60 years with mean age was 49±9.38 (table-1). There were 88(40%) males and 132(60%) were females (table-2). There were 73 (33%) patients had adhesive capsulitis <1 month while 147 (67%) patients had adhesive capsulitis from ≥1 month and mean duration of adhesive capsulitis was 1.2±2.37 months (table-3).

Mean baseline SAPDI score was 81.31±72.8 while the final SAPDI after 4-weeks was 19.52±5.74 so the change in SAPDI after 4 weeks was 61.79±1.81 (table 4). Stratification of mean change in SPADI score form baseline with age, gender and duration of the disease is given in tables 5-7.

Discussion:

Chronic Adhesive capsulitis is a common mus-

culoskeletal problem. It has a reported prevalence of 2–5% in general population, however 11% prevalence has been reported in patient with diabetes.¹¹ Patient with this condition commonly present a pain and restricted movement, resulting in difficulty accomplishing personal hygiene, and overhead movement, reaching or rotational activities causing day to day activity disability.¹²

Patients having adhesive capsulitis ranges from 22-85 years with female affected more than men with no racial distribution.^{13,14} Left shoulder is more commonly affected (66%) than right shoulder (47%).¹⁴ Both shoulder involvement is reported in 16% of patients.⁴ The base line characteristic in our study of 113 cases of chronic adhesive capsulitis are similar to those reported in the studies in regard to non-dominant shoulder and age. In this trial this disease was found in left shoulder in 66 patient (58%) and right shoulder (42%) the mean age of the patient was 49 ± 9.3 years. This is disagreement in regards to gender as reported in literature to be more common in female. In this trial among the 113 patients included in the study 62 (55%) were male 51 (45%) were female although more common in female as in international literature but in our study and other studies.³ The prevalence is high in the male and the reason could be social reasons and customs of our society.

Treatment options varies from non-operative i.e. NSAIDs, oral steroids, range of motion exercises, steroids injection into the joint, manipulation under anaesthesia (MUA) and Hydraulic distension (HD) per-operative.³⁻⁵

Currently there is no consensus on NSAIDs use for chronic adhesive capsulitis.¹⁵ Most of NSAIDs are indicated in bursitis only. However prolonged use of NSAIDs causes adverse effect like GI upset, kidney damage and liver damage. Serious gastro-intestinal bleeding must be considered as a significant risk with chronic use.¹⁶ while exhibiting a better gastro-intestinal safety profile¹⁷ the new COX-2 selective inhibitors have not been shown to be better analgesics¹⁸ and have been associated with other significant

side effects¹⁹ thus with few oral medication approved and inconclusive evidence to support those that are approved, there remains need for additional non-surgical options.

Gam et al²⁰ treated Adhesive capsulitis with steroid injection & distension with Lidocaine & found that patients who were given steroids into the joint group (12 patients) used less analgesics and had better range of motion compared to the steroid only group (8 patients).

Although numerous case series have reported favorable result of orthographic shoulder joint distension, most have included corticosteroid: therefore it is not possible to directly attribute the benefit the joint distension.²¹

In a randomized controlled trail (eighty people with adhesive capsulitis less than six month duration) compared four intervention; intra articular corticosteroids versus placebo with or without physiotherapy.²² All participant were given an identical home exercise program. Outcome measure were assessed at 6-weeks. The primary outcome measure was the shoulder disability questionnaire score. Secondary outcome were measurement of pain using a visual analogue scale (VAS), global disability using VAS, and range of passive external rotation.

X ray control is not normally available for joint injection. However, in another study done by vander Wind et al,²³ 109-people with adhesive capsulitis three injections of intra-articular corticosteroids (given without X ray control) were compared with 12-physiotherapy sessions over 6-weeks. It was concluded that corticosteroid injection significantly increased success rates at 6-weeks compared with physiotherapy.

In this descriptive study of 220 cases of chronic adhesive capsulitis treated with intra articular corticosteroids we established better response in patients, both in term of pain relief and disability. Other studies have also reported intra-articular corticosteroids as an effective treatment for adhesive capsulitis.²¹⁻²³ In our research we founded both improvements in pain as well

as disability due to chronic adhesive capsulitis by using intra articular corticosteroids. We noted that the initial average pain using SPADI. In the present study population was 81 ± 7.28 (range 45-94), which improved to 19.5 ± 7.47 after 4-week time. Statistical comparison proves a significant p value of <0.05 . The study also show that in study population there was statistically significant reduction in disability from 79.5 ± 7.6 at the beginning of the treatment of 25.6 ± 18.2 at end of 4 week after injection of steroid in the shoulder joint. Thus we concluded that treatment with intra-articular corticosteroid is an effective treatment for chronic adhesive capsulitis both in relieving pain disability at 4 weeks.

Conclusion:

We conclude intra-articular shoulder joint corticosteroid injection chronic adhesive capsulitis is beneficial for the patient which is evident by mean SPADI score. The mean SPADI score improved a lot after intra articular corticosteroid injection in adhesive capsulitis.

Conflict of interest: None

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Role and contribution of authors:

Dr Aimal Sattar, collected the data, references and wrote the article

Dr Muhammad Shabbir, helped in collecting the data and also helped in introduction writing.

Dr Zeeshan Faisal, helped in collecting the data, references and also helped in the article writing.

Dr Muhammad Ayaz, collected the references and also helped in discussion writing.

Dr Wali Muhammad, critically review the article and advised useful changes

References:

1. Lewis J. Adhesive capsulitis contracture syndrome: etiology,

- diagnosis and management. *Man Ther* 2015;20(1):2-9.
2. Khan MH, Nuhmani S. Adhesive capsulitis- A Review of current concepts. *J Musc Pain* 2014;22(3):308-13
 3. Li W1, Lu N1, Xu H1, Wang H1, Huang J1. Case control study of risk factors for Adhesive capsulitis in China. *Int J Rheum Dis* 2015;18(5):508-13.
 4. Lee H, Kim SY, Chae SW. A comparative study of behaviors of normal Adhesive capsulitis: a finite element study. *Int J Presc Eng Manufac* 2017; 18(4):545-53.
 5. Uppal HS, Evans Jp, Smith C. Adhesive capsulitis: a systematic review of therapeutic options. *World J Orthoped* 2015;6(2):263.
 6. Iqbal MJ, Anwar W, Rahman N, Kashif S, Khan A. Supra-scapular nerve block in the treatment of Adhesive capsulitis. *J Surg Pakistan* 2012;17:1-5.
 7. Neviasser AS, Neviasser RJ. Adhesive capsulitis of shoulder. *J An Acad Orthop Surg* 2011; 19(9):536-42.
 8. Tobola A cook C, Cassas KJ, Hawkins RJ, Wienke JR, Tolan S. Accuracy of glenohumeral joint injection: comparing approach and experience of provider. *J Shoulder Elbow Surg* 2011;20(7):1147-54.
 9. Siraj M, Anwar W, Iqbal MJ, Rahman N, Kashif S. effectiveness of intra articular corticosteroid injection in the treatment of chronic Adhesive capsulitis. *J Surg Pak* 2012; 17(2):57-60.
 10. Mukherjee RN, Pandey RM, Nag HL, Mittal R. Adhesive capsulitis: a prospective randomized clinical trial. *World J Orthoped* 2017;8:394.
 11. Cakir M, Samanci N, Balci N, Balci MK. Musculoskeletal manifestations in patients with thyroid diseases. *Clin Endocrinol (Oxf)* 2003; 59(2):162-7.
 12. Hannafin JA, Chiaia TA. Adhesive capsulitis: a treatment approach. *Clin Orthop* 2000; 372:95-109.
 13. Mueller LP, Mueller LA, Happ J, Kerschbaumer F. Adhesive capsulitis: a sympathetic dystrophy? *Arch Orthop Trauma Surg* 2000;120:84-7.
 14. Tasto, James P, Elias, David W, Adhesive Capsulitis. *Sports Med & Arthroscopy Review*. 2007; 89(7)928-32.
 15. Green S, Buchbinder R, Glazier R, Forbes A. Interventions for shoulder pain. *The Cochrane Review*. Oxford, UK: The Cochrane Library. 2002.
 16. Andrew JR, Diagnosis and treatment of chronic painful shoulder: review of nonsurgical interventions. *Arthroscopy* 2005;21(3):333-47.
 17. Goldstein JL, Silverstein FE, Agarwal NM, reduced risk of upper GI ulcer complications with celecoxib, a novel COX-2 inhibitor. *AM J Gastrentrol* 2000;95:1681-90.
 18. Dionne R, Relative efficacy of selective COX-2 inhibitors compared with over the counter ibuprofen. *Int J Clin Pract* 2003; 135:18-22.
 19. Mengle-Gaw LJ Schwartz BD. Cyclooxygenase-2 inhibitors: promise or peril? *Mediators Inflamm* 2002; 11:275-86.
 20. Gam An, Schydlowsky P, Rossel I, Remvig L, Jensen EM. Treatment of Adhesive capsulitis with distension and glucocorticoid alone, a randomized controlled trial. *Scand J Rheumatol* 1998; 27:425-30.
 21. Green S, Buchbinder R, Glazier R, Forbes A, Interventions for shoulder pain. *The Cochrane Review*. Oxford, UK: The Cochrane library, 2002.
 22. Ryans I, Montgomery A, Galway R. A randomized controlled trial of triamcinolone and/or physiotherapy in shoulder capsulitis. *Rheumatology* 2005; 44:529-35.
 23. Vander Windt DA, Koes BW, Deville W. Effectiveness of corticosteroid injections versus physiotherapy for treatment of painful stiff shoulder in primary care: randomized trial. *BMJ* 1998;317:1292-6.