Medico Research Chronicles

ISSN No. 2394-3971

Original Research Article

OUTCOMES OF SHORT-COURSE ORAL CORTICOSTEROID WITH NON-STEROIDAL ANTI-INFLAMMATORY DRUGS FOR EARLY STAGE OFFROZEN SHOULDER AT KOSHI ZONAL HOSPITAL

Yagya RajKharel[1], Shambhu Sah[1], Rem Kumar Rai[1], Nabin Subedi[1], Anurag Raj Adhikari[2], ShivamKarn[2]

[1]Department of Orthopedics, Koshi Zonal Hospital, Biratnagar, Nepal.
[2]Department of Physiotherapy, Koshi Zonal Hospital, Biratnagar, Nepal.

Submitted on: May 2018
Accepted on: June 2018
For Correspondence
Email ID:
dryagyarajkharel@gmail.com

ABSTRACT

Introduction:
Frozen shoulder or adhesive pericapsulitis is a common condition estimated to be afflicting 2-5 % of the general population. It presents with pain and progressive limitation of both active and passive shoulder movement. Numerous treatment options have been described in the literature. Among them, one of the treatment methods commonly used is oral corticosteroid combined with non-steroidal anti-inflammatory drugs (NSAID). This treatment has been found effective in the early stage of frozen shoulder.

Objective:
Evaluation of the outcomes in patients with a frozen shoulder after short course oral corticosteroid and NSAIDS.

Methodology:
In this cross-sectional study, 50 patients having an early stage of frozen shoulder presenting to the outpatient department of Koshi Zonal Hospital from July to December 2017 were included. We included those patients who had already taken more than two courses of NSAID elsewhere but symptoms did not alleviate. We excluded those patients who were diabetic, pregnant and who had a history of trauma in and around the shoulder, neuromuscular disease, suspected pathology such as a tumor, rotator cuff rupture, infection, and arthritis. Oral steroid and NSAID tablets were given to all the patients under coverage of an oral proton pump inhibitor. The shoulder home exercise program was also instituted. The follow-ups were done on the1st,7th,14thand 21stday in the physiotherapy department to measure range of motion (ROM) and shoulder pain and disability index (SPADI) to evaluate the final outcomes. The data was analyzed by using Microsoft Excel program.

Results:
We found the mean age 49.46 years (range 30-60 years), duration of illness mean 15 weeks (range 10-19 weeks), considerable improvement of ROM from the baseline. Total SPADI scores

calculated on the1st daywas mean total 66.7, the 1st week was mean 49.99, 2nd weekwas mean 38.53 and3rd week was mean 26.63 respectively.

Conclusion :

The short- course of corticosteroid with NSAID along with shoulder stretch exercises provides rapid pain relief as well as improved ROM and SPADI in a patient with the early-stage frozen shoulder.

Keywords: frozen shoulder, corticosteroid, physiotherapy

Introduction

Frozen shoulder, also known as adhesive pericapsulitis characterized by shoulder pain and limitation of range of movement in all directions of both active and passive motion and importantly normal radiographic findings other than osteopenia. It is a common condition estimated to be afflicting 2-5% of the general population [1,2]. This predominantly affects females in their 4th to 6th decades [3]. Frozen shoulder has been classified as primary and secondary by Lundberg [2]. Primary frozen shoulder occurs without an underlying disease and has no findings in the history. The secondary frozen shoulder is associated with trauma, prolonged immobilization, soft tissue injuries or shoulder surgery and ischemic heart disease. Diabetes is a risk factor for the frozen shoulder with the incidence of 10-20% and diabetics have a greater risk of recurrence [4].

The primary frozen shoulder has been described mainly in three stages: freezing, frozen and thawing. The early stage i.e. freezing stage is the first 3 to 9 months which is characterized by pain with active and passive ROM, severe shoulder pain that worsens at night. Restriction in external rotation occurs first, followed by internal rotation and abduction. The stiffening phase can last for a duration of 9 to 15 months and is associated with chronic pain during active and passive ROM, however, the pain begins to subside and results in progressive loss of ROM. The final thawing phase is the last 15 to 24 months and is associated with minimal pain but the gradual return of movement[5,6,7].

Many treatment modalities have been advocated for the management of frozen shoulder. Most patients respond well to nonsurgical treatment modalities. Immobilization should be discouraged however physiotherapy, mainly the stretch exercises should be started early. The best initial treatment is dictated by the stage and severity of the condition. There is a scarcity of level one evidence for or against the commonly used treatment modalities of frozen shoulder. The treatments that have been advocated for frozen shoulder include analgesics, physiotherapy, oral corticosteroids, steroid injections, fluoroscopic or ultrasound-guided hydrodilatation also known as distension arthrography, manipulation under anesthesia and arthroscopic capsular releases. In the 1950s oral steroids were advocated in the frozen shoulder as they accelerated the recovery of the condition and reduced the need for manipulation under anesthesia. NSAID analgesic has been reported to be effective during any phase of the capsulitis as an attempt to relieve the pain[3,8,9].

Our aim was to investigate the effect of combined oral corticosteroid, NSAIDs, home-based self stretch-physiotherapy by evaluation of pain, ROM in the treatment of early-stage primary idiopathic frozen shoulder.

Methodology

This cross-sectional study was conducted in 50 patients with age ranging

between 30-60 years, who presented at the out-patient department of orthopedics, Koshi Zonal Hospital, Nepal from July to December 2017. We took convenient sampling for this study. Ethical clearance was taken from the hospital authority. Informed consents were signed by all patients. The diagnosis of frozen shoulder was made by taking a careful history of shoulder pain with limitation of both active and passive movements in at least two directions and the symptoms occurring for more than six weeks. All of the patients had already taken more than two courses of NSAID analgesics elsewhere but had persisting symptoms. Exclusion criteria were diabetics, pregnant, history of trauma to the shoulder, neuromuscular disease, suspected pathology such as a tumor, rotator cuff rupture, infection, and arthritis. We asked all patients to put their hands behind their back and touch their spine and elevate both arms together with palms facing upwards. Plain radiograph, complete blood count, random blood sugar and renal function test were obtained in all of the enrolled patients. Patients with any abnormalities in those laboratory parameters were excluded from the study. Physical therapy was carried out as a home-based stretching exercise program after the pain subsided or was within the tolerable limit. Home exercises like pendulum stretches, finger walk on the wall, towel stretches, cross-body arm stretch, armpit stretches, outward and inward shoulder rotation was thoroughly taught and trained by an experienced physiotherapist. All patients were explained regarding the potential need for intra-articular injection if symptoms were not improving. Patient's compliance was checked onevery7thday follow-up visit. The physiotherapist recorded a range of motion (ROM) and shoulder pain and disability index (SPADI)[10] during the first visit and on each follow up on the 7th, 14th and 21st day. Patients were given oral corticosteroid treatment of tablet methylprednisolone in tapering dose as 12 mg per day for the first 7 days, then 8mg per day for the next 7 days and finally 4mg per day for the last 7 days. We also gave a proton pump inhibitor (pantoprazole) and an NSAID (etoricoxib or paracetamol) for 5 to 10 days according to the severity of shoulder pain.

Results

In our study fifty patients of frozen shoulder, the mean age was 49.46 years (range 30-60), male mean age was48.91years (range 35-60), female mean age was 50 years (range 30-60). The male to female ratio was 1:2.85 with a female predominance of the frozen shoulder [Table 1].

Table 1. Distribution of age, sex, side of shoulder and duration

Mean age	49.46 years(range 30-60)
Male	13 males, mean age 48.91 years(range 35-60)
Female	37 females, mean age 50years (range 30-60)
Male frozen shoulder right / left side	13 (8 Right) (5 Leftt)
Female frozen shoulder right / left side	37 (17 Right) (20 Left)
Duration of illness (weeks)	Mean 15 weeks (range 10-19 weeks)

Table 2. The range of motion during medication and physiotherapy with home exercise

ROM (Degrees)	1st-day baseline	1st week	2nd week	3rd week
Flexion	124.98°	133.66°	143.26°	152.96°

	(100-132)	(100-140)	(105-155)	(108-162)
Extenxion	38.92° (36-40)	43.92° (38-45)	47.48° (40-48)	51.42° (42-55)
Abduction	103.82° (80-110)	118.84° (85-136)	128.18° (90-142)	139.42° (100-150)
External rotation	43.04° (30-50)	49.78° (38-50)	59.46° (32-74)	69.26° (34-82)
Internal rotation	40.36° (30-45)	44.42° (32-50)	51.08° (33-56)	59.5° (33-65)

Most of the patients felt comfortable and ROM improved in our treatment and physiotherapy with home exercises.

Table 3. SPADI Score (%)

Score(% Mean)	Baseline 1st day	1st week	2nd week	3rd week
Pain score Mean & range	66.4 (60-80)	51.68 (44-70)	39.56 (30-60)	26.96 (20-50)
Disability Mean & range	67 (55-80)	48.3 (40-70)	37.5 (30-60)	26.3 (20-50)
Total SPADI	66.7 (59.5-80)	49.99 (42-70)	38.53 (30-60)	26.63 (20-50)

All the patient recovered except 9 patients who needed intra-articular methylprednisone because of persisting pain even in the 3rd-week visit.

Discussion

Frozen shoulder is a commonly encountered musculoskeletal condition, yet the etiopathogenesis and the most effective treatment remains unclear. Frozen shoulder is typically considered an inflammatory process. Treatment may initially involve the use of anti-inflammatory medications or corticosteroids. Non-steroidal anti-inflammatory drugs (NSAIDs) may be used during any phase in an attempt to relieve symptoms. At this time, there is no single standard treatment regime that appears to be the most effective over a long-term period. Response to treatment is based on significant pain relief, improved satisfaction, and the return of functional motion. Stretching exercise therapy is important in the frozen shoulder to avoid recurrence of frozen shoulder.[11,12].

Widiastuti-Samektoet al[13] described some patients had epigastric pain after oral corticosteroid. Some even dropped out during the second week because of severe gastric complaints. Their study indicated intra-articular steroid injection combined with physiotherapy exercises provide a faster improvement in stage 2 and 3 frozen shoulder syndrome as compared to oral corticosteroid tablets treatment. In our study, there was an improvement of ROM in all cases; [Table 2]. TheSPADI score with baseline mean Pain Score and mean Disability score of 66.4 and 67 respectively improved notably to 26.96 and 26.3 at 3rd week; [Table 3]. The early stage frozen shoulder treated with low dose of methylprednisolone and NSAID had good results in this study. We took precautions in that patient who were suffering from gastritis. Canbulat N et al[14] found that oral

glucocorticoid therapy combined with pregabalin is an effective treatment for patients with the idiopathic frozen shoulder when administered in the first stage of the disease and the effects were long-lasting.

There are numerous treatment methods mentioned in the literature, the physiotherapy, and oral analgesics remains the first line of management in the majority of cases. However, some studies advocate the use of oral corticoids as the first line of management. Oral steroids are more effective in getting pain relief in the freezing phase of frozen shoulder. The use of non-steroidal anti-inflammatory drugs (NSAIDs) for analgesia is a widely instituted modality[15]. Patients who do not respond or worsen further should be considered for an intra-articular corticosteroid injection. In our study, 9 patients (18 %) needed steroid injections to become pain-free after the third week follow up.

Oral steroid therapy is considered to be effective as a non-operative treatment for frozen shoulder. However, informed consents from patients and careful follow-ups are necessary because of the possibility of osteonecrosis of the femoral head and osteoporosis after prolonged or repeated use of steroids and NSAIDs [16].

Conclusion

Combination of oral corticosteroid, NSAID and home-based physiotherapy of stretch exercises give good result in the early stage of frozen shoulder.

Limitation of the study

Small sample size and short follow up periods are limitations of the study. The SPADI score used in this study was suitable for our busy OPD patients. Other more reproducible scoring systems could not be used because of the time constraints.

Recommendations

The early results show good outcomes in our study. However, larger sample size and longer follow-ups with other standard outcome scoring systems should be done. Home-based physiotherapy should continue to avoid recurrence of frozen shoulder.

Conflict of Interest

The authors declare no financial support or conflict of interest.

References

1. Anton H. Frozen shoulder. Can FamPhys 1993;39:1773–7.
2. Lundberg.The frozen shoulder. Acta Orthop Scand 1969;119(suppl):5–59
3. Manske RC, Prohaska D. Diagnosis, and management of adhesive capsulitis. Current reviews in musculoskeletal medicine. 2008 Dec 1;1(3-4):180-9.
4. Tighe CB, Oakley WS Jr. The prevalence of a diabetic condition and adhesive capsulitis of the shoulder. South Med J. 2008; 101:191-195. (Pubmed)
5. Chan HB, Pua PY, How CH. Physical therapy in the management of frozen shoulder. Singapore medical journal. 2017 Dec;58(12):685
6. Hsu JE, Anakwenze OA, Warrender WJ, Abboud JA. The current review of adhesive capsulitis. Journal of shoulder and elbow surgery. 2011 Apr 1;20(3):502-14.
7. Van de Laar SM, van der Zwaal P. Management of the frozen shoulder. Orthopedic Research and Reviews. 2014 Oct 7;6:81-90.
8. Ewald A. Adhesive capsulitis: a review. Am Fam Physician. 2011 Feb 15;83(4):417-22.
9. Buchbinder R, Hoving JL, Green S, Hall S, Forbes A, Nash P. Short course prednisolone for adhesive capsulitis (frozen shoulder or stiff painful shoulder): a randomized, double-blind, placebo-controlled trial. Annals of the rheumatic diseases. 2004 Nov 1;63(11):1460-9.
10. Roach KE, Budiman-Mak E, Songsiridej N, Lertratanakul Y. Development of a

shoulder pain and disability index. Arthritis & Rheumatology. 1991 Dec 1;4(4):143-9.
11. Kelley MJ, Mcclure PW, Leggin BG. Frozen shoulder: evidence and a proposed model guiding rehabilitation. journal of orthopaedic& sports physical therapy. 2009 Feb;39(2):135-48.
12. Manske RC, Prohaska D. Clinical commentary and literature review: diagnosis, conservative and surgical management of adhesive capsulitis. Shoulder & Elbow. 2010 Oct 1;2(4):238-54.
13. Widiastuti-Samekto M, Sianturi GP. Frozen shoulder syndrome: comparison of oral route corticosteroid and intra-articular corticosteroid injection. Med J Malaysia. 2004 Aug;59(3):312-6.
14. Canbulat N, Eren I, Atalar AC, Demirhan M, Eren SM, Ucak A. Nonoperative treatment of frozen shoulder: oral glucocorticoids. International Orthopaedics. 2015 Feb 1;39(2):249-54.
15. Lakhani A, Alawadhi K, Jain S, Bhatnagar SM. Comparison of Oral Glucocorticoid and Only Analgesics in the Treatment of Idiopathic Frozen Shoulder. Int J Med Res Prof.2016; 2(5); 238-40.
16. Takase K. Oral steroid therapy for frozen shoulder. West Indian Medical Journal. 2010 Dec;59(6):674-9.