

Role of Steroid Injection in Treatment of Impingement Syndrome of Shoulder

MUHAMMAD ARIF¹, MUHAMMAD ABDUL HANNAN², OMER FAROOQ TANVEER³, TANVEER HAIDER⁴, MUHAMMAD ASIF SAEED⁵, RIZWAN ANWAR⁶

¹Assistant Professor Orthopedics Islam Medical College Sialkot.

^{2,6}Senior Registrars Orthopedics Khawaja Muhammad Safdar Medical College Sialkot

³Assistant Professor Orthopedics Khawaja Muhammad Safar Medical College Sialkot

⁴Associate Professor Orthopedics Khawaja Muhammad Safdar Medical College Sialkot

⁵Assistant Professor Orthopedics Sialkot Medical College, Sialkot

Correspondence to Dr. Tanveer Haider, Email: tanvirhaider381@gmail.com Cell: 0320-8622222

ABSTRACT

Aim: Diagnosis and outcomes of steroid injections in treatment of impingement syndrome of shoulder.

Methods: The study was conducted in Islam Medical College of Sialkot from April 2015 to March 2018 and comprised of 100 patients.

Results: Mean patients age was 39.13±9.036 years where male to female percentages were 57% to 43%. We observed noteworthy changes in patients with SPADI Scores falling to 34% from 68% in initial evaluation.

Conclusion: Steroid Injection is an effective, fast and easy pain relieving procedure however to fully conclude we need more data to study and conduct various other questionnaire and for different periods.

Key words: Shoulder impingement syndrome, Steroid injections, SPADI scores

INTRODUCTION

Shoulder impingement syndrome begins by thinning of the supraspinatus tendon located at the upper part of the bursa between the humerus and the acromion that also makes up the shoulder blade.¹ Activities that slides the shoulder in repeated movements cause impingement syndrome for instance lifting, swimming, tennis, painting and other sports. Shoulder impingement can take various forms however impinging of the supraspinatus muscle beneath the acromion is a must.² Usually this issue causes functional limitation in flexion and abduction range and can also result in operational disability.³

Around 22% of the population is affected by shoulder pain and a considerable amount of time in clinical practice is spent on shoulder complications.^{4,5} Although multiple reasons can cause shoulder problems including rotator cuff tears, Adhesive capsulitis, Arthritis of the glenohumeral joint or acromioclavicular (AC) joint, however impingement syndrome is one of the most repeated complaint in shoulder issues. Usually a physician carries out a detailed history along with some physical examination and suggest either physical therapy or some injections with only very few cases that demand a surgery.

Nevertheless very few researches have been carried out on the efficacy of steroid injections (SIs) in the management of Impingement Syndrome. Researches shows that surgeries for rotator cuff, glenohumeral instability, calcific tendinitis and other recurring shoulder pains can result in increased and continuing pain which result in post-operative complications like muscle stiffness.⁶⁻⁸ In contrast better prospects have been observed of steroid injections, with clearly lesser pain thus suggesting continuing use.⁹⁻¹⁵

In locating pain in impingement syndrome, it has been

observed that indulging in activities increases pain however activities involving the elbow are least painful. Usually Impingement syndrome increases pain on sides and front of shoulder and also cause difficulty in rotating the shoulder however passive movements are likely to be similar in the shoulder with no pain. Nowadays pain scales and scores are being used by physicians to evaluate the outcomes of a treatment.¹⁶⁻²² similarly we will be reviewing pain ratings of patients using SPADI Scores. Compare to patients who get relived from steroid injections and physiotherapy, ones who don't are referred for surgical management.

MATERIALS AND METHODS

The detailed study was conducted in Islam Medical College of Sialkot and all patients with shoulder impingement syndrome during April 2015 to March 2018. Patients with a history of shoulder injury, previous shoulder dislocations, rotator cuff tears or scapula fracture, humeral head/neck fractures, suffering from adhesive capsulitis, Glenohumeral arthritis and previous shoulder surgery were included. We also used "The Neer impingement sign" to diagnose impingement syndrome in the initial evaluation. We recorded the Mean Age, age brackets and relative patient's frequency and standard deviation. We have used the scores on SPADI questionnaire, which consists of 13 questions. It has two significant categories named "pain" (5 items) and "disability" (8 items). Scores are calculated from 0 to 130 where 0 shows lesser shoulder pain and 100 shows more shoulder disability. However if a person does not answer all questions, the denominator is decreased by 10 units. The nominal measurable difference is set at 19 points (95% confidence level) and this was used to classify patients as implicitly improved or not improved after taking steroid injections, 6 weeks later from scores in initial evaluation. Approximately it takes 10 minutes for a patient to answer the SPADI questionnaire and it's steady and

Received on 27-06-2019

Accepted on 17-12-2019

useable for the shoulder. Moreover the statistical analysis conducted by SPSS Version 20

RESULTS

There were 57% males and 43% females of mean age 39.13 ± 9.03 were diagnosed with shoulder impingement syndrome. Most patients suffering from impingement syndrome i.e., 44% were in the age bracket of 40-50. While the maximum and minimum age in our population was 55 years and 23 years respectively. Although 27% patients aged between 20-30 and 17% between 30-40 while 13% were above 50 years (Table 1).

Table 1: Frequency of age

Age	No.	%
20-30	27	27.0
30-40	17	17.0
40-50	44	44.0
>50	13	13

Fig. 1: Clinical symptoms of shoulder impingement syndrome patients

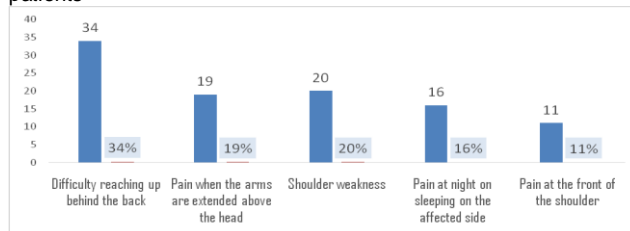


Fig. 2: Mean SPADI Scores on Initial Evaluation Question-wise

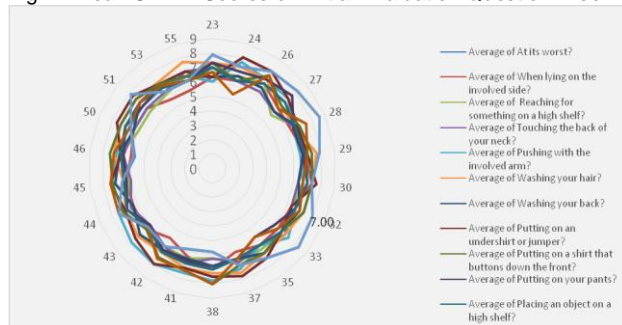
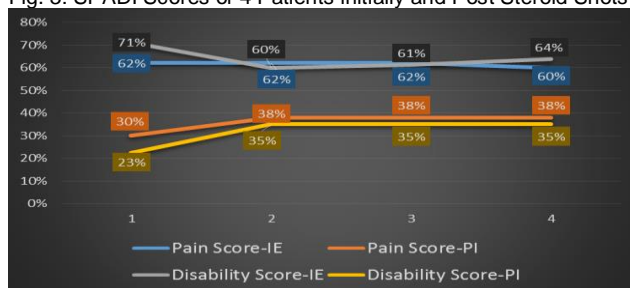


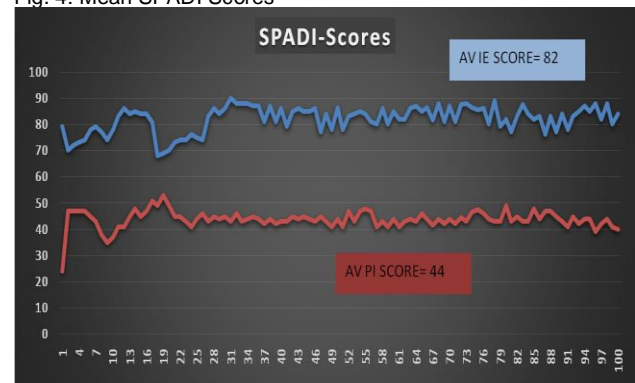
Fig. 3: SPADI Scores of 4 Patients initially and Post Steroid Shots



The Neer impingement test and on elevating patients arm above their head caused pain in the front of the shoulder to 64% Patients thus proving a positive impingement sign however remaining 36% could not feel pain and a more detail diagnosis using X-rays and careful

questioning was done to ascertain their condition (Fig.1). From the history and physical examination records, the most common symptoms in our age groups was difficulty reaching up behind the back i.e. 34%, and 20% presented shoulder weakness, 19% had pain when the arms are extended above the head and 16% felt pain at night on sleeping on the affected side and 11% suffered pain at the front of the shoulder. In the initial evaluation on the Radar, the mean scores of all 13 questions were 6.96, 6.29, 6.52, 6.49, 7.11, 7.15, 6.71, 7.22, 7.18, 6.66, 6.72, 6.98 and 6.972. An overall 6 above score was noted at inception (Fig. 2). After injecting the patients with steroid injection, 6 weeks later the follow-up showed significant changes in SPADI scores. Figure 3 shows SPADI Scores of 4 random Patient in initial evaluation & post injection. Clearly the Pain Score at initial evaluation is between 60% and 62% while disability scores between 60% to 71% however the injected cases showed downright trend with pain scores going down by 26% i.e. from 62% to 36%. Similarly Disability score went down by 32% i.e. 64% to 32%. Overall average 38 point decrease in SPADI Scores was observed (19 points baseline –Confidence level 95%). Out of the 100 population of 57 male and 43 females the mean Score at IE was 82 and post-injection after 6 weeks was 44. None of the patients showed resulting major or minor problems or complications post injection shot. Thus no case of infection or dermatitis or need for surgery was reported in our data (Fig. 4).

Fig. 4: Mean SPADI Scores



DISCUSSION

In our study out of the 100 Shoulder impingement syndrome patients 57% were Male while females constituted 43% of the entire population with mean age of 39.13 (9.036). To exemplify the results, we observed a similar local study which showed 46.67% males and 53.33% Females and the mean age of the patients were 44.58 ± 11.48 years.²³ In *Orthopedic Today* consultant mentioned. Our results support that corticosteroid injection is an effective and safe tool in controlling shoulder pain. Shoulder impingement was mainly caused due to patients not being able to rest on the affected side with majority of cases i.e. 34% felt difficulty in reaching up behind their backs and above their head however there were no minor or major complications in our study of infections and skin deformities.²⁴

In previous literatures etiologies, diagnosis and treatment of Impingement syndrome has been studied before however there has been conflicting findings due to either the extensive range of disorders or no pooling of positive and negative results. According to Cochrane, sub acromial steroid injection was revealed as an effective treatment for improving the range of abduction. Nevertheless there has been differences in other researches showing only short-term benefits of steroid injections mainly due to patients type, or change of concentrations and composition of injection fluids, dissimilarity in the quantity and gap of injections and also the diverse methods choose to analyze the outcomes.

Even the placement of needle cause changes in outcomes as Eustace *et al* specified that, only very few injection are applied accurately (29%) in shoulder issues even if its musculoskeletal specialists and also stated that outcome are directly proportional to needle placement of injection²⁵. Similar study found that needle was placed in only 70% of cases²⁶.

Our study showed mean SPADI score of 82 ± 5.04 in initial evaluation and 6 weeks post follow-up to injected cases gave us a mean score of 44 ± 3.39 . Overall 98% cases showed improvement with only 2 cases needing another shot. Similar findings were made with mean SPADI score of the patients as 75.94 ± 7.73 which was reduced to 46.25 ± 5.62 after 6 weeks²³. Similar study found 88% improvement in a population of 25 patients. Thus in managing shoulder impingement, steroid injections show beneficial effects.²⁷

CONCLUSION

Steroid injections are efficient and safe and improve pain and function both however there can be differences in results which can be further work for better precision.

REFERENCES

1. Umer M, Qadir I, Azam M. Subacromial impingement syndrome. *Orthopaed Rev (Pavia)* 2012; 4(2): 43-6.
2. Cummins CA, Sasso LM, Nicholson D. Impingement syndrome: temporal outcomes of nonoperative treatment. *J Shoulder Elbow Surg* 2009;18: 172-7.
3. Akgün K, Birtane M, Akarımak Ü. Is local subacromial corticosteroid injection beneficial in subacromial impingement syndrome? *Clin Rheumatol* 2004; 23: 496-500.
4. Hill CL, Gill TK, Shanahan EM, Taylor AW. Prevalence and correlates of shoulder pain and stiffness in a population-based study: the North West Adelaide Health Study. *Int J Rheum Dis* 2010; 13(3):215-22.
5. Ostör AJ, Richards CA, Prevost AT, Speed CA, Hazleman BL. Diagnosis and relation to general health of shoulder disorders presenting to primary care. *Rheumatology (Oxford)* 2005; 44(6): 800-5.
6. Huberty DP, Schoolfield JD, Brady PC, Vadala AP, Arrigoni P, Burkhart SS. Incidence and treatment of postoperative stiffness following arthroscopic rotatorcuff repair. *Arthroscopy* 2009;25(8):880-90.
7. Cole BJ, Schumacher HR Jr. Injectable corticosteroids in modern practice. *J Am Acad Orthop Surg* 2005;13(1):37-46.
8. Kang RW, Frank RM, Nho SJ, Ghodadra NS, Verma NN, Romeo AA, et al. Complications associated with anterior shoulder instability repair. *Arthroscopy* 2009;25(8):909-20.
9. Gruson KI, Ruchelsman DE, Zuckerman JD. Subacromial corticosteroid injections. *J Shoulder Elb Surg* 2008;17(1 Suppl):118S-30S.
10. Alvarez CM, Litchfield R, Jackowski D, Griffin S, Kirkley A. A prospective, double-blind, randomized. *Pain Ther* 2017; 6:45-60 57
11. Koester MC, Dunn WR, Kuhn JE, Spindler KP. The efficacy of subacromial corticosteroid injection in the treatment of rotator cuff disease: a systematic review. *J Am Acad Orthop Surg* 2007;15(1):3-11.
12. Arroll B, Goodyear-Smith F. Corticosteroid injections for painful shoulder: a meta-analysis. *Br J Gen Pract* 2005;55(512):224-8.
13. Blair B, Rokito AS, Cuomo F, Jarolem K, Zuckerman JD. Efficacy of injections of corticosteroids for subacromial impingement syndrome. *J Bone Jt Surg Am* 1996;78(11):1685-9.
14. Plafki C, Steffen R, Willburger RE, Wittenberg RH. Local anaesthetic injection with and without corticosteroids for subacromial impingement syndrome. *Int Orthop* 2000;24(1):40-2.
15. Lorbach O, Anagnostakos K, Scherf C, Seil R, Kohn D, Pape D. Nonoperative management of adhesive capsulitis of the shoulder: oral cortisone application versus intra-articular cortisone injections. *J Shoulder Elb Surg* 2010;19(2):172-9.
16. Rhon DI, Boyles RB, Cleland JA. One-year outcome of subacromial corticosteroid injection compared with manual physical therapy for the management of the unilateral shoulder impingement syndrome: a pragmatic randomized trial. *Ann Intern Med* 2014;161(3):161-9.
17. Reilingh ML, Kuijpers T, Tanja-Harfterkamp AM, van der Windt DA. Course and prognosis of shoulder symptoms in general practice. *Rheumatology (Oxford)* 2008;47(5):724-30.
18. Kuijpers T, van der Heijden GJ, Vergouwe Y, et al. Good generalizability of a prediction rule for prediction of persistent shoulder pain in the short term. *J Clin Epidemiol* 2007;60(9):947-53.
19. Kuijpers T, van der Windt DA, van der Heijden GJ, Bouter LM. Systematic review of prognostic cohort studies on shoulder disorders. *Pain* 2004;109(3):420-31.
20. Kennedy CA, Manno M, Hogg-Johnson S, et al. Prognosis in soft tissue disorders of the shoulder: predicting both change in disability and level of disability after treatment. *Phys Ther* 2006; 86(7):1013-32.
21. Bot SD, van der Waal JM, Terwee CB, et al. Predictors of outcome in neck and shoulder symptoms: a cohort study in general practice. *Spine (Phila Pa 1976)* 2005;30(16):E459-70.
22. Thomas E, van der Windt DA, Hay EM, et al. Two pragmatic trials of treatment for shoulder disorders in primary care: generalizability, course, and prognostic indicators. *Ann Rheum Dis* 2005;64(7):1056-61.
23. Karim K, Sah RJ, Rasheed A, Awais SM. Functional improvement after sub-acromial corticosteroid injection in patient with shoulder impingement syndrome. *Ann King Edward Med Uni* 2016;22(2):115
24. Gruson KI, Ruchelsman DE, Zuckerman JD. Subacromial corticosteroid injections. *J Shoulder Elb Surg* 2008;17(1 Suppl):118S-30.
25. Eustace JA, Brophy DP, Gibney RP, et al. Comparison of the accuracy of steroid placement with clinical outcome in patients with shoulder symptoms. *Ann Rheum Dis* 1997;56:59-63.
26. Yamakado K. The targeting accuracy of subacromial injection to the shoulder: an arthrographic evaluation. *Arthroscopy* 2002; 18:887-91.
27. Rao SE, Muzammil S, Hobbs NJ. Subacromial decompression for shoulder impingement syndrome. *J Coll Physicians Surg Pak* 2006; 16(3):208-11.