ORIGINAL ARTICLE

Treatment of Frozen Shoulder in Diabetic Patients

Muhammad Ali Shah[1], Muhammad Shafiq[2], Shakil Ahmad Shah[3], Irfan Aziz[4]

ABSTRACT

Objective: To check the affects of manipulation under anesthesia (MUA) and intra articular steroid injection in diabetic patients having frozen shoulder.

Material and Methods: Thirty Diabetic patients having unilateral frozen shoulder with minimum duration of three months were selected for this prospective study. The patients were injected once after manipulation under anesthesia. The solution injected contained 3cc of 2% lidocain hcl (xylocain) and 2cc methylprednisolone acetate (Depomedral). All patients were advised to perform range of movements exercise daily .Follow up visits ware done at 1 week, 4 week, 8 week and 12 week for compilation of results.

Results: Total of 30 patients with average age of 55 years were evaluated, out which 60% were female and 40 % were male. Right shoulder was involved in 79 %. All the active range of motion of shoulder, pain at rest as well as during motion improved considerably as compared to before the procedure.

Conclusion: In diabetic patients with frozen shoulder, single MUA and intra articular injection of corticosteroid injection is effective in improving shoulder pain and disability as compared to non diabetics.

Key words: Frozen shoulder, Adhesive capsulitis, Intra-articular steroid injection.

INTRODUCTION

Frozen shoulder is also called Adhesive capsulitis and is a condition characterized by insidious pain and limitation of all the movements of the shoulder joint.[1] It was first described by Duplay in 1872,and he called it “periarthrite capsule-humerale”a painful, stiffening condition of the shoulder and He advised manipulation under anesthesia as its treatment.[2] In 1934 it was labeled as “frozen shoulder” by Codman as a condition having insidious onset ,pain near the insertion of deltoid, inability to sleep on the affected side, painful and restricted elevation and external rotation, but normal radiological appearance.[3] Neviaser discovered the term “adhesive capsulitis” based upon his findings of synovial changes in the glenohumeral joint in 1945.[4] The causes of frozen shoulder are largely unknown[5]. But the recognized risk factors for the disease are patients having diabetes mellitus, hyper or hypothyroidism , Parkinson’s disease, cardiovascular illness and those whose shoulder is immobilized for prolonged period due to trauma[6,7].

Orthopedic Ward DHQ Teaching Hospital Dera Ismail Khan

Correspondence: Dr Muhammad Shafiq, Phone # 03005921801, 0966716888

Primary frozen shoulder has three clinical phases A- Painful phase ,B- Stiffening or frozen phase, C- Thawing phase(8). Etiology and the most suitable treatment of this condition are still not clear but various different modalities of treatments have been recommended and large number of studies has demonstrated successful results. Types of treatment include supervised neglect, oral steroids, intra – articular injections, physiotherapy programmes, manipulation under anesthesia, arthroscopic capsular release and open surgical release[9].

The aim of this study was to evaluate the effectiveness of manipulation under anesthesia followed by intra articular corticosteroid injection in the treatment of frozen shoulder in diabetic patients.

MATERIAL AND METHODS

This was a prospective study and conducted in DHQ Teaching Hospital D I Khan KPK from Jan: 2014 to Dec 2014.

Inclusion criteria were;

1. No history of previous trauma to shoulder.
2. Age above 35 years.
3. Normal x-ray of the shoulder.
4. Unilateral involment.

5. Duration of symptoms more than 3 months but less than 6 months.
6. Normal cardiovascular status.
7. Controlled diabetes mellitus.

All the patients were admitted in orthopedic department through OPD usually one day before manipulation. Necessary routine investigations were performed. Diabetic history and its treatment was thoroughly taken. Shoulder movements of both sides were compared and noted. Restriction of abduction, internal and external rotation and pain at rest and duration were taken in to account for the diagnosis of frozen shoulder. Range of motion of the shoulder was measured with the goniometer in degrees except passive internal rotation of the shoulder which was assessed by bringing the hand behind and determining the vertebrae level that could be reached by the thumb. If the thumb reaches to hip joint then the score is 1, at SI joint level it is 2, at L5 it is 3 and so on. Pains at rest and at extreme movements were evaluated using Visual Analogue Scale (VAS) in which `0` means no pain and at the other end `10` means severe unbearable pain. These readings were taken before the treatment, at 1, 4 and 12 weeks so that the outcome of treatment could be determined and recorded. All the data were processed using SPSS. P value < 0.05 was considered as level of significance.

RESULTS

A total of 36 patients were enrolled. Six patients were lost to follow up at 4 weeks time and excluded. In 30 patients 18 were males and 12 were females, the age range was from 35 to 75 years. Four patients were not taking any type of anti diabetic medicines for more than 1 year ,and in the remaining twenty were on oral and six were on injection insulin .The average duration of diabetes is more than 10 years in 50 % patients. The blood sugar level was in normal range in 93% at the time of admission and in the rest was controlled with insulin injection that took average 3 days. In all 30 patients the average range of motion of shoulder joints improved considerably as compared to before the procedure at one week follow up. Pain at rest was decreased in intensity but pain at activity did not decrease significantly. After 4 weeks all the movements of shoulder joint, pain at rest as well as during activity improved markedly. Following the procedure with the home exercise program range of motion as well as reduction in pain score improved even further at 12 weeks period.

Table: Final outcome of the study.

Time	Abduction	Internal rotation	External rotation	Pain at rest	Pain at motion
Pre-procedure	45.50	3.00	13.25	6.75	7.50
1 week	120.25	5.50	40.00	5.50	6.75
4 weeks	140.75	7.75	53.75	2.00	3.00
12 weeks	160.50	12.00	60.50	0.50	0.75

DISCUSSION

Frozen shoulder is common in diabetic patients and is one of the most common self limiting conditions seen in OPD manifested by symptoms like pain and stiffness of shoulder joint.[10] There are four main treatment options: A. Intra articular corticosteroid injection (under fluoroscopic control) plus physiotherapy, B. Corticosteroid injection alone, C. Saline injection plus physiotherapy, and D. Saline injection alone.[11]

In our study the right side was involved in79 % of patients, for which the actual reason may not be found but it can be presumed to be due to dominancy and may result from repeated minor traumas that had not been noticed by the patients. Male patients were more than female, may be due to social reasons for decreased approach to hospital. Pal et al conducted a study on diabetic patients and has given results almost similar to our study.[6]

In some studies continuous passive motion and stretching exercises has shown more promising results as compared traditional practice.[12,13] Carette et al concluded that intra articular corticosteroid with or without physiotherapy significantly improved pain and disability at 6 weeks compared to other options.[14] Most noninvasive therapeutic strategies are based on stretching or rupturing the tight capsule by manipulative physical therapy with success rate of achieving good to fair results nearing 100%.[15] The good results of physical therapy with intra articular steroid injection ,with or without hydraulic distention ranges from 44 …..80 %.[16] Khan et al used a combined approach of (intra articular injection of local xylocain with corticosteroid plus coraco-humeral infiltration

plus supra scapular nerve block)plus gentle manipulation and active assisted range of motion exercises in the management of frozen shoulder.[17] They have significant improvement in the range of movements as well as relief of pain in patients. Ahmad et al in another study observed an average improvement in pain as per VAS of 4.5 in 12 weeks follow up time[18]. The range of motion similarly improved; abduction from 60 to95 degrees and internal rotation from 20 to 40 degrees. Imran et al in his recent study also presented very good results[19]. All these studies produce comparable results to our study. These studies have pointed out that intra articular steroid injection is an effective mode of therapy in frozen shoulder, given with or without physiotherapy.

Intra articular steroid injection is quite effective in frozen shoulder in short term follow ups as obvious from the literature but whether its effects persists in the long term yet to be established.[11] Very few studies on long term effect of this mode of treatment are available like that of Dudkeiwicz et al (2004)[13]. In their study of 54 patients ,with mean follow up of 9.2 years, claimed that conservative primary treatment for frozen shoulder i-e physiotherapy and intra articular steroid injection was an effective long term treatment method.

CONCLUSION

Manipulation under anesthesia and Intra-articular steroid plus local anesthetic injection is a useful option in diabetic patients with frozen shoulder as compared to non diabetics, at least in the short term .Studies with large sample size and of long duration is required to find out the effectiveness of this mode treatment in long term basis. More over comparative studies among local anesthetic, steroids injection and manipulation under anesthesia are also required to see which one among these three is most effective in frozen shoulder.

REFFRENCES

1. Rizk TE, Pinals RS, Frozen shoulder. Semin Arthritis Rheum 1982; 11:440-52.
2. Duplay S,De la peri-arthrite scapula- humerale et des raidures de l'epaule que en sont la consequence arch. Gen Med 1872;20:513-42.
3. Codman EA. The Shoulder: rupture of the supraspinatus tendon and Other lesions in or about the sub armorial bursa. Boston ,1934.
4. Naviaser JS. Adhesive capsulitis of shoulder ; a study of pathological findings in periarthritis of shoulder. J. Bone Joint Surgery 1945;27; 211-22.
5. Lubieck M,Carr A. Frozen shoulder; past, present and future. J Orthop Surg 2007 ;15:1-3.
6. Pal B, Anderson J,Dick WC ,Griffiths ID,limitation of joit mobility and shoulder capsulitis in insulin and non insulin dependant diabetic mellitius .Br j R HEUMATOL 1986:25 ;147-51.
7. Riley D, Lang AE, Blair RD ,Birnbaum A,Reid B. Frozen shoulder and other shoulder disturbances in Parkinson's disease. J NeurolNeurosurg Psychiatry 1989;52:63-6.
8. Hand GC ,Athansou NA, MaTHews T, Carr AJ.The pathology of frozen shoulder. J Bone Joint Surg Br.2007; 89:928-932.
9. Ozaki J,Nakagawa Y ,Sakurai G, Tamai S .Recalcitrant chronic adhesive capsulitis of the shoulder.Role of contracture of the coracohumeral ligament and rotator interval in pathogenesis and treatment. J Bone Joint Surg 1989; 71-A: 1511-5.
10. Shaffer B,Tibone JE,Kerlan RK.Frozen shoulder : a long term follow up. J Bone Joint Surg 1992; 74-A:738-46.
11. Siraj M, Anwer W, Iqbal MJ, Rehman N, Kashif S ,Khan A Ahmad I. Effectiveness of intra articular corticosteroid injection in the treatment of idiopathic Frozen shoulder .Journal of Surgery Pakistan (International)2012;17(2):57-60.
12. Dundar U, Tokas H, Cakir T, Evik D, Kavuncu V. Continous passive motion provides good pain control in patients adhesive capsulitis. Int J Rehabil Res 2009,32(3):193-8.
13. Dudkiewiz J, Oran A, Salai M, Palti R, Pritch M. Idiopathic adhesive capsulitis: long term results of conservative treatment. Isr Med Assoc J 2004, 6 (9):524-6.
14. Carette S, Moffet H, Tardiff j . intra articular steroids, supervised physiotherapy, or a combination of the two in the treatment of adhesive capsulitis of the shoulder joint. Arthritis Rheum 2003 ;48:829-38.
15. Gouple P, Sibila J .Local corticosteroid injection in the treatment of rotator cuff tendinitis (except for frozen shoulder and calcific tendinitis) Groupe Rheumatalogque Francis de Epaule (G.R.E.P.)Clinic Exep Rheumatol 1996;14:561-6.
16. Ritzmann P."Frozen shoulder "intra articular steroid lead to faster pain relief than physiotherapy [in german]. Schweiz Rundsch Med Prax 1996;88:1369-70.
17. Khan JA , Devkota P, Acharya BM, Prandan NMS, Shershtha SK, Singh M , Mainali L. Manipulation

under local anesthesia in idiopathetic frozen shoulder, a new effective and simple technique. Nepal Med Coll J 2009;11(4):247-253.

18. Ahmad I, Askar Z, Durrani Z, Idrees M, Ayaz M, Hakim A, Zia U, Samad A. Intra articular steroid injection of methyl prednisolone for idiopathic frozen shoulder. J Med Sci 2009; 17 (1):16-8.
19. Imran M, Shafiq M, Saqib M, Alamgir K. Adhesive capsulitis shoulder: Role of manipulation under general anesthesia along with intra articular steroid injection .International Ophthalmology Update. Pakistan (Islamabad) Oct-Dec 2014; Vol.12.No .4:318-320.