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RESEARCH ARTICLE

LOCAL CORTISONE INJECTION AND PHYSIOTHERAPY FOR THE TREATMENT OF FROZEN SHOULDER

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ABSTRACT

76 patient was included in this study, 48 female and 28 male, 62 patient was in phase 2 and 14 patient in phase 1. The age of the patients ranging from 43 – 71 year. All patients were idiopathic i.e (no associated disease). All the patients were examined by active and passive movements of the affected shoulder joint.The diagnosis of frozen shoulder was made depending on history, examination and X-Ray was taken to reveal out other pathology. Mean simple shoulder test (SST) score for 14 patients in phase 1 before cortisone injection and physiotherapy was 48.77% and after 4 month became 91.1%. Mean simple shoulder test (SST) score for 44 patients 27.2% and became 86.04% after cortisone injection and physiotherapy. Mean simple shoulder test (SST) score for 18 patients 27.2% and became 43.4% after cortisone injection and physiotherapy.

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INTRODUCTION

The American Shoulder and Elbow Surgeons (ASES) defines frozen shoulder as condition of unknown cause characterized by sever limitation of passive and active movement of shoulder joint which is occurs in spite that there is no intrinsic disorder of shoulder joint (Hsu *et al*., 2011; Zuckerman, 2011). Frozen shoulder or Adhesive capsulitis is a condition that is characterized by pain and progressive restriction of active and passive movement of the affected shoulder, It is affected about 2%-5% 0f population, while affect 20% those patients with diabetes mellitus (Hsu *et al*., 2011). It divided into primary and secondary, primary is idiopathic while secondary due to many causes such as rotator cuff disorder, hemiparesis, diabetes mellitus and cardiovascular diseases (Hsu *et al*., 2011; Neviaser, 2011). Most of those patients are female (Wong, 2010). In patient with primary frozen shoulder history, clinical examination and x-ray to the affected shoulder joint there is no significant finding to explain pain and restriction of movement. Primary frozen shoulder symptoms classify into three phases painful, stiffness and thawing. The painful phase is started by gradual onset of diffuse shoulder pain which last from weeks to months. In stiffness phase there is progressive loss of movement which may stay up to one year. Majority of the patients lose their glenohumeral movement in internal rotation, external rotation and abduction in this phase.

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The last one is thawing phase which last from weeks to months and characterized by gradual movement improvement. When patient reach this phase it may need 9 month to regain his functional movement (Tasto, 2007; Hand *et al*., 2008; Hand, 2007). There are many options to treat frozen shoulder and all options efficacy not proved that one more effective than other, also no establishment whether treatment with one option or combination (Robinson *et al*., 2012; Guyver *et al*., 2014). Previous studies established that the use of cortisone give short period of effectiveness (Buchbinder, 2003; Maund *et al*., 2012). Buchbinder *et al*. (2003). Conclude treatment by cortisone is beneficial but it is effect is small. Shah and Lewis (Shah, 2017), Conclude that multiple cortisone injections (up to three) assisted by physiotherapy decrease the pain and improve range of movement for a period ranging from 6-16 weeks. Study done by Blanchard *et al*. (2010) which compare the effect of cortisone injection versus physiotherapy conclude that cortisone injection decrease pain and improve range of movement in short time (six weeks) to a lesser extent long time which is up to one year.

Presentation of patients

- Most of the patients have pain before stiffness (Evidence-based clinical guidelines for the diagnosis, assessment and physiotherapy management of contracted (frozen) shoulder, 2011).

- Usually affect non-dominant shoulder or occur at either joint.
- 14% of patients have bilateral shoulder involvement (Smith *et al*., 2014).
- It start by gradual onset of pain which is associated with stiffness.
- Limitation of active and passive movements of the affected shoulder joint.
- The patient cannot sleep on the affected joint.

MATERIALS AND METHODS

The study was done between February 2014 and January 2017 in private clinic. 76 patient was included in this study 48 female and 28 male, 62 patient was in phase 2 and 14 patient in phase 1. The age of the patients ranging from 43 – 71 year. All the patients was idiopathic i.e (no associated disease). All patients was examined by active and passive movements of the affected shoulder joint. All patients have limitation movements in flexion, extension, internal and external rotation. X-Ray was taken to all patients to exclude other diseases like osteoarthritis of the acromioclavicular joint, infection or tumors. The diagnosis of frozen shoulder was made depending on history, examination and X-Ray was taken to reveal out other pathology. 14 patients in phase 1 all of them was recovered after 1.5 months (3-5 weeks) of physiotherapy. 44 patients of phase 2 are recovered after 3 months of physiotherapy (6- 8 weeks), 18 patients of patients of phase 2 not recovered after 4 months of physiotherapy. 2 cc of local anesthesia (xylocaine 2%) and 80 mg of long acting cortisone (depo-medrol) injection at subacromial bursa of the diseased joint of 76 patients included in this study. The technique done by putting the patient in an upright position and insert the needle inferior to postero-lateral edge of the acromion process directing it medially and slightly anteriorly and the solution should flow freely without any significant resistant to prevent injury to tendons and aspiration was done before injection to prevent injection of solution intravenously. All patients send for physiotherapy in form of shoulder exercise for 4 month and follow up every 2 weeks for each patient.

RESULTS

A total of 76 patients 62 patients in phase 2 and 14 patients in phase 1. The patients who regained 15 degree movement in comparison to other normal side in form of flexion, extension, external and internal rotation we regarded them recovered at a main time of 2.5 months. 14 patients in phase 1 all of them was recovered after 1.5 months (3-5 weeks) of physiotherapy. 44 patients of phase 2 are recovered after 3 months of physiotherapy (6- 8 weeks). 18 patients of patients of phase 2 not recovered after 4 months of physiotherapy. The SST, developed by university of Washington, shoulder service, department of orthopaedic surgery, is a series of 12 "yes" or "no" questions answered by patient about the function of involved shoulder. This test provides a standardized way of recording the functions of shoulder before and after the treatment (Beaton *et al*., 1998). Mean simple shoulder test (SST) score for 14 patients in phase1before cortisone injection and physiotherapy was 48.77% and after 4 month became 91.1%. Mean simple shoulder test (SST) score for 44 patients 27.2% and became (86.04%) after cortisone injection and physiotherapy. Mean simple shoulder test (SST) score for 18 patients 27.2% and became (43.4%) after cortisone injection and physiotherapy.

Table 1. Simple shoulder test university of washington, shoulder service, department of orthopaedic surgery (lippitt sb, matsen fa)

Dominant hand evaluating questions right or left	yes	no
1- Is your shoulder comfortable with your arm at rest by your side?		
2- Does your shoulder allow you to sleep comfortably?		
3- Can you reach the small of your back to tuck in your shirt with your hand?		
4- Can you place your hand behind your head with the elbow straight out to the side?		
5- Can you place a coin on a shelf at the level of your shoulder without bending your elbow?		
6- Can you lift one pound (a full pint container) to the level of your shoulder without bending your elbow?		
7- Can you lift eight pounds (a full gallon container) to the level of your shoulder without bending your elbow?		
8- Can you carry twenty pounds at your side with the affected extremity?		
9- Do you think you can toss a softball under-hand twenty yards with the affected extremity?		
10- Do you think you can toss a softball over-hand twenty yards with the affected extremity?		
11- Can you wash the back of your opposite shoulder with the affected extremity?		
12- Would your shoulder allow you to work full-time at your regular job?		
Total		
Scoring Responses. Scale. Twelve functional task questions answered yes or no (yes 1, no, 0). Score range. Range is 0–12, (transformed to percentage). Interpretation of scores. Best score is 12/12, representing no disability. Method of scoring. (Number of yes responses/ number of items answered) X100.		

Table 2. SST for 14 patients of phase (1) before treatment Mean score (48.77%)

SST	NO. of patient	percentage
7/12×100	2	58.3%
8/12×100	5	66.6%
5/12×100	7	33.33%

Table 3. SST for 14 patients of phase (1) after treatment Mean score (91.1%)

SST	NO. of patient	percentage
10/12×100	7	83.4%
11/12×100	1	91.7%
12/12×100	6	100%

DISCUSSION

Frozen shoulder is a disabling disease we see it every day in our clinical practice. In this study we excluded all patients with secondary causes of frozen shoulder (i.e. diabetes mellitus, hyperthyroidism and rotator cuff syndrome) and treat only patients with idiopathic frozen shoulder.

Table 4. SST for 62 patients of phase (2) before treatment Mean score (27.4%)

SST	NO. of patient	percentage
3/12×100	33	25%
4/12×100	24	33%
2/12×100	5	16.6%

Table 5:-SST for 44 patients of phase (2) after treatment. Mean score (86.04%)

SST	NO. of patient	percentage
10/12×100	32	83.3%
11/12×100	10	91.7%
12/12×100	2	100%

Table 6. SST for (18) patients of phase (2) who not respond to treatment mean score was (43.46)

SST	NO. of patient	percentage
5/12×100	15	41.6%
6/12×100	2	50%
7/12×100	1	58.3%

A total of 76 patients 14 patients in phase (1) and 62 in phase (2). All patients in phase (1) and more than 2 third of patients in phase (2) have a good range of movement after treatment. Mean simple shoulder test (SST) score for 14 patients in phase1before cortisone injection and physiotherapy was 48.77% and after 4 month became 91.1%. All patients regain a good range of movement of their affected shoulders. Mean simple shoulder test (SST) score for 44 patients 27.2% and became (86.04%) after cortisone injection and physiotherapy.

This result is less than that in patients of phase (1) and take slightly more period of time to regain function of the affected shoulder. Mean simple shoulder test (SST) score for 18 patients 27.2% and became (43.4%) after cortisone injection and physiotherapy. Those 18 patients who not respond to treatment probably not follow regular program of exercise done by physiotherapist or because injection not in the right site because injection depend on anatomical site and not assisted by radiology. All those patients who not respond to our treatment advise to do manipulation under anesthesia to treat their symptoms. 18 patients who not respond to treatment probably not follow regular program of exercise done by physiotherapist or because injection not in the right site because injection depend on anatomical site and not assisted by radiology. All those patients who not respond to our treatment advise to do manipulation under anesthesia to treat their symptoms. This result is approved by Carette S, Moffet H, *et al*, who said that treatment by combination of local cortisone and physiotherapy is better than by one of them. Also (Dudkiewicz I, Oran A, Salai M, Palti R, Pritsch M 2004), claimed that combination with physiotherapy and cortisone injection gives a very good result. However Sheridan and co-authers (Sheridan, 2006), said that after 2 years follow up there was no long difference between treatment groups.

Conclusion

Local cortisone injection and physiotherapy is an easy and less side effect method for treatment of frozen shoulder and it is better to treat frozen shoulder early in stage (1) than stage (2)

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