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Comparison between Intraarticular Triamcinolone Acetonide and Methyl prednisolone Acetate Injections in Treatment of Frozen Shoulder.

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ABSTRACT

Background: This study is aimed to compare the effectiveness of intra-articular injections of 2 corticosteroid preparations; triamcinolone acetonide (40 mg) and methyl prednisolone acetate (40 mg) in patients with frozen shoulder. **Methods:** 100 patients were enrolled randomly in our study and randomly divided into two groups. Diagnosis of frozen shoulder was made using the guidelines for shoulder complaint issued by the Dutch College of General Practitioners. The assessment of pain was by using scores of; 0 (no pain); 1 (mild); 2 (moderate); 3 (severe); 4 (severe night pain that interferes with night sleep).The outcome of intervention was assessed at 8 weeks and after that at 3 months, at 6 months and at 1 year. **Results:** Right side was found to be more involved than the left. Male &Female ratio was 1:3. 51% patients belong to age group 55–65. We got 62.7% satisfactory result in Group A as compared to 51.8% in Group B. **Conclusion:** We conclude that triamcinolone acetonide is a good rescue for painful stiff shoulder particularly for resistant cases as with diabetes mellitus, and with long duration of illness.

Keywords: intra-articular injections, triamcinolone acetonide, methyl prednisolone acetate, frozen shoulder, diabetes mellitus.

INTRODUCTION

Frozen shoulder is a common, but ill-understood disorder. It affects the glenohumeral joint, possibly involving a non-specific chronic inflammatory reaction, mainly of the subsynovial tissue, resulting in capsular and synovial thickening.[1-4] It has a number of medical synonyms including scapulo-humeral periarthritis, adhesive capsulitis, periarthritis, pericapsulitis, stiff shoulder, and obliterative bursitis. Frozen shoulder is used to denote a limitation of shoulder motion, without abnormalities of the joint surface, fracture, or dislocation. The onset of frozen shoulder is usually gradual and idiopathic, but it may be acute and associated with a previous history of minor injury to the shoulder joint. The disease occurs mainly in middle-aged individuals and is usually self-limiting, but the duration and severity may vary greatly.[5-6]

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The clinical picture of frozen shoulder is characterised by pain and restriction of the range of active and passive motion of the shoulder. Pain, which can be severe, may cause pronounced sleep disturbance. Restriction of the range of motion is usually more marked with external rotation,[5,7,8] but less prominent with abduction and internal rotation. Information on the treatment and prognosis of frozen shoulder is inadequate and based largely on individual practice experience rather than randomised controlled clinical trials. There is as yet no definitive agreement on the most effective form of treatment. Initial treatment is aimed at reducing inflammation and increasing the range of movement. Thus analgesic and anti-inflammatory drugs are commonly used[9]. Most types of treatment focus primarily on restoration of mobility. Intra-articular injection is one of the method to decrease pain and increase the range of movement

MATERIALS AND METHODS

After taking informed consent 100 patients were enrolled in our study randomly irrespective of gender, attending the OPD, with a diagnosis of frozen shoulder. The diagnosis of frozen shoulder was made using the guidelines for shoulder

complaint issued by the Dutch College of General Practitioners.

Inclusion criteria

(1) Shoulder pain for at least 1 month and less than 12 months duration;

(2) Pain at night, with inability to lie on the affected side

Exclusion criteria

(1) History of major shoulder injury (bony) or surgery

(2) Clinical or radiological evidence of other pathology that could possibly account for symptoms

(3) Patients with evidence of cervical radiculopathy, paresis, or other neurological changes in the upper limb on the involved side

(4) The presence of underlying fracture associated inflammatory arthritis, known renal or hepatic disease, haemtopoietic disorder, malignancy, or any mental disorder likely to interfere with the course or assessment of the disease process.

In all enrolled patients the basic laboratory investigations like CBC, FBS or RBS, blood urea and serum creatinine, and urine analysis were carried out routinely. ECG was done in patients more than 35 years of age and X-ray when indicated. The entire procedure was explained to the patient. The participants were divided into group A and B. Patients were randomized to one of the following interventions:

Group A: Injection (INJ) Lignocaine 2%, 3 ml and Injection Triamcinolone Acetonide 40 mg (1 ml).

Group B: Injection Lignocaine 2%,, 3 ml and Injection Methyl prednisolone 40 mg (1 ml).

After all aseptic measures, the post-erolateral approach is followed, which is safe and easy to execute: The posterior tip of the acromion is palpated, and the needle is inserted into the space between the acromion and the head of the humerus. The needle is angled anteriorly toward the coracoid process. Once in the space, the syringe is drawn back to ensure that the needle is not in a vascular structure. Resistance during delivery of the medication remained minimal. After performing the block, patients were placed immediately in supine position. After 2 hours, range of movements at shoulder joint was assessed by clinical examination and pain was assessed by Visual Analogue Scale (VAS). Three intra articular injections in to the shoulder given at three week interval by the same technique and followed up 8 weeks from the start of treatment. In the next 2 days, all the patients were assessed daily for improvement in range of movements and pain levels. The study is undertaken to evaluate the quality and duration of analgesia and improvement in range of movements at shoulder joint.

Patients were allowed to continue taking drugs for pain if they had started before enrollment; drugs could also be prescribed if pain was severe. Also, the patients were encouraged to continue physical exercise of the involved joint at home by performing flexion, abduction and external rotation movements many times a day as hard as they can.

The outcome of intervention was assessed at 8 weeks and after that at 3 months, at 6 months and at 1 year. For the analysis of success rates for each treatment patients as having made a complete recovery or as having much improvement were counted as successes. The assessment of pain was by using scores of; 0 (no pain); 1 (mild); 2 (moderate); 3 (severe); 4 (severe night pain that interferes with night sleep). The assessment of disability was in term of regaining full activity of daily living that included grooming, combing, washing, and others. The changes in scores of pain symptom and disability at the end of trial was calculated for each patient and compared with those at baseline. The percent of recovery was computed.

50 patients were included in each group. Group A includes 50 patients (40 Females and 10 males) and Group B includes 50 patients (35 Females and 15 males). The data were analysed using the SPSS (version 19) software.

RESULTS

Female preponderance was seen in frozen shoulder patients [Table 1]. Right side was found to be more involved than the left [Table 2]. 82 % of total patients had Right side involvement. Group A patients treated with Triamcinolone acetonide showed better results in regard to the improvement in pain scores as well as range of movements overall. Diabetic patients (21 in Group A and 17 in Group B) significantly responded better to Triamcinolone acetonide injection in comparison to Methyprednisolone injection. Diabetic patients also required less frequent injections of Triamcinolone acetonide compared to those who received Methyl prednisolone acetate injection. However there was no significant advantage of Triamcinolone acetonide injection in posttraumatic or primary frozen shoulder in comparison to group B patients receiving methyl prednisolone, however they both are found effective in reducing pain scores and overall mobility of shoulder joint.

Table 1: Showing Male & Female distribution in two groups

Group	Males	Females	Total
A	10 (20%)	40 (80%)	50
B	15 (30%)	35 (70%)	50

Table 2: Showing side involvement.

	Group A	Group B	Total (%)
Right side	42(84 %)	40 (80 %)	82 %

Left side	8 (16%)	10 (20 %)	18 %

51% patients belong to age group 55 – 65 [Table 3]. The minimum age of the patients is 37 years and the maximum is 63 years. Intensity of pain and disability in the two study groups were similar [Table 4].

Table 3: Showing age distribution.

Age group	Group A	Group B	Percentage (%)
35 – 44	10	8	18
45 – 54	16	15	31
55 - 65	24	27	51

Table 4: Showing pain score.

Pain Score	Group A	Group B
2 (moderate)	8	5
3 (Severe)	15	16
4 (Severe night pain)	27	29

Triamcinolone acetonide injections group was more effective than methyl prednisolone injections in patients with frozen shoulder presented with high pain scores. The effectiveness of corticosteroid injections were clearly observed in patients with short duration of illness (≤ 3 months) and this efficacy declined as the duration of illness became longer. The efficacy of triamcinolone acetonide injections was significantly higher than that of methyl prednisolone acetate in patients with longer duration of illness. We got 62.7% satisfactory result in Group A as compared to 51.8% in Group B.No significant relation was detected between 2 groups according to range of motion in flexion, abduction, external rotation and internal rotation ($p>0.05$). Also any significant difference in pain score was not detected ($p>0.05$).

DISCUSSION

In our study, Male &Female ratio was 1:3, as well as right side of body was affected more in cases of frozen shoulder. Sanjib Goswami et al, Siegel LB et al and Jayson also found similar results in their studies[10-12]. The incidence of frozen shoulder in diabetes mellitus patients was reported to be 10-36% in literature[13]. We got 38% diabetic patients in our study. In our study diabetes mellitus patients responded in a better way after receiving triamcenalone acetonide injection. In regard to improvement of baseline pain score and degree of shoulder movement disability both groups have almost similar result except diabetes mellitus patients.

Most studies agreed that the effectiveness of corticosteroid injections were observed in painful freezing (10-36 weeks) phase and useless in adhesive phase (4-12 months)[14-16]. In our study, the effectiveness of the 2 corticosteroid preparations decline as the history of illness is prolonged, but this decline is significantly more with methyl prednisolone acetate injections.

Rizk et al found that intraarticular methyl prednisolone injections had no advantage in restoring shoulder motion but partial, transient pain relief occurred in two-third.[17] But in our study we noted if regular physiotherapy with strict patients compliance is done along with injection long lasting results can be obtained. It is unlikely to attribute these findings, firstly, to the difference in dosage form as fixed dose is used in this trial. Secondly, from the pharmacological point of view, there were no pharmacokinetic or pharmacodynamic differences between triamcinolone acetonide and methyl prednisolone acetate.[18]

Some studies believed that better clinical outcome is related to the accurate intraarticular injections and they advised to do it under fluoroscopy.[19,20]

CONCLUSION

We conclude that triamcinolone acetonide is a good rescue for painful stiff shoulder particularly for resistant cases as with diabetes mellitus, and with long duration of illness. Also, its efficacy can be observed with less frequent injections as compared to methyl prednisolone injections.

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