

## Original Article

## THE USE OF STEROIDS FOR THE MANAGEMENT OF CHRONIC SHOULDER PAIN BY INTERVENTIONAL TECHNIQUES

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**Background:** Pain as a common symptom of shoulder disease, has diverse etiologies. NSAIDs, physiotherapy, neural blocks, intraarticular injections, and surgery are the most commonly used methods of treatment. The goals of this study were to reduce pain and improve the range of motion of the affected shoulder.

**Methods:** Among 70 patients referred to a private pain clinic with chronic shoulder pain as their major complaint (duration of pain 21 mo), 63 patients were chosen for regional blocks as follows: suprascapular (25%), sub-acromial bursa and suprascapular (40%), sub-acromial bursa and field block (FB) (14%), brachial plexus (11%), cervical epidural (6%), and FB (4%). Pain relief evaluation was done according to Visual Analog Scale (VAS) (using a 100-segmented ruler). Pain relief > 50% was considered successful and special health-care and medical exercise therapy recommended.

**Results:** Average age of patients was  $49.2 \pm 13.7$  years (females = 64% and males = 34%). Sixty-seven percent of patients had significant pain relief after a week, 73% after 4 weeks, and 81% after 12 weeks ( $P < 0.0001$ ).

**Conclusion:** Regarding the results of pain relief after 1, 4, and 12 weeks postinjection, it appears that the pain relief state is likely to be permanent after the first week.

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**Keywords:** Interventional techniques • shoulder pain • steroid

### Introduction

Shoulder pain (SP) is one of the most common complaints in pain clinics. SP may originate from trauma, degeneration, inflammation, vascular disease, and may also be referred from the hand, neck, or viscera.<sup>1</sup> SP may accompany back and neck pain or headache.

The proper activity of this complex joint is due to the correct functioning of a large number of tendons, ligaments, muscles, and five other joints.

These joints are the acromioclavicular, humeroscapular, scapulothoracic, glenohumeral, and sternoclavicular joints.<sup>2, 3</sup> In most cases an inflammation or mechanical injury in the sub-acromial space may cause an acute shoulder movement limitation or frozen shoulder. This problem could be cured by drugs, physical therapy, exercise, nerve block, steroid injection in the rotator cuff, or surgery.<sup>3</sup> Trigger point injections and suprascapular nerve block (SSNB) are advocated to break down the pain phenomenon and ease exercise.

Jones et al in a 12-week follow-up observed much better results from SSNB combined with intraarticular injection, compared to mere several intraarticular block.<sup>5</sup> Luis treated 16 patients suffering from chronic SP with movement limitation in a 13-week follow-up period. He used prilocaine 1% (4 mL) and phenol 6% (4 mL) to

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block SSN and its circumflex branch simultaneously.<sup>6</sup> Local anesthetic (LA) without a steroid can be injected in a lateral approach to diagnose rotator cuff tendonitis and/or subacromial bursitis.<sup>7</sup> Steroid injection in elderly patients, in the acute phase in the first 4 – 6 weeks, is not recommended.<sup>8</sup> Steroid combined with LA injection in the synovial tendonitis has shown good results.<sup>9</sup> Steroid therapy in several clinical trials was found useful for patients with shoulder-hand syndrome, who were indeed suffering from adhesive capsulitis in the glenohumeral joint.<sup>10–16</sup>

There is no similar report available concerning the use of steroids for the management of chronic shoulder pain by interventional techniques. Therefore, the goals of this research were to reduce shoulder pain despite all other conservative treatments, and to improve the range of motion of the shoulder affected.

### Patients and Methods

This study was a double-blind, sequential clinical trial before and after intervention, on 70 patients referred to a private pain clinic and had no control group.

All patients were referred to the clinic due to chronic SP, after the failure of treatment by drugs and physical therapy. Demographic and clinical data were gathered in a questionnaire, after obtaining informed consents. These records led to

an appropriate form of treatment based on physical examination of the patients.

The injection consisted of 10 – 20 mL of 0.125% bupivacaine (Bucain, Cursan AG) combined with 40 – 80 mg triamcinolone acetate (Triamhexal, Hexal AG, Germany), repeated 1 – 3 times in regular periods. Interventional techniques used for patients are displayed in Figure 1.

Patients were recommended to have a complete shoulder rest for 24 hr, relative rest for 48 hr, and 4 days limb activity restriction according to their treatment. A week after the first block, the patient was examined and evaluated by another colleague, then examined by the researcher. If the pain relief was less than 50% of the first value, according to Visual Analog Scale (VAS) (using a 100-segmented ruler), the block procedure ceased and a conservative treatment like exercise was started for the patient. Patients, pain relief and shoulder movement were followed up for 12 weeks. All patients' psychological conditions were evaluated by a clinical psychologist, and if a significant psychological disorder detected, the patient was excluded from the study and an appropriate therapy conducted. In addition, patients without indication for interventional techniques were excluded from the study.

### Statistical analysis

Data analysis was performed with the SPSS statistical software. Leven's test for examining

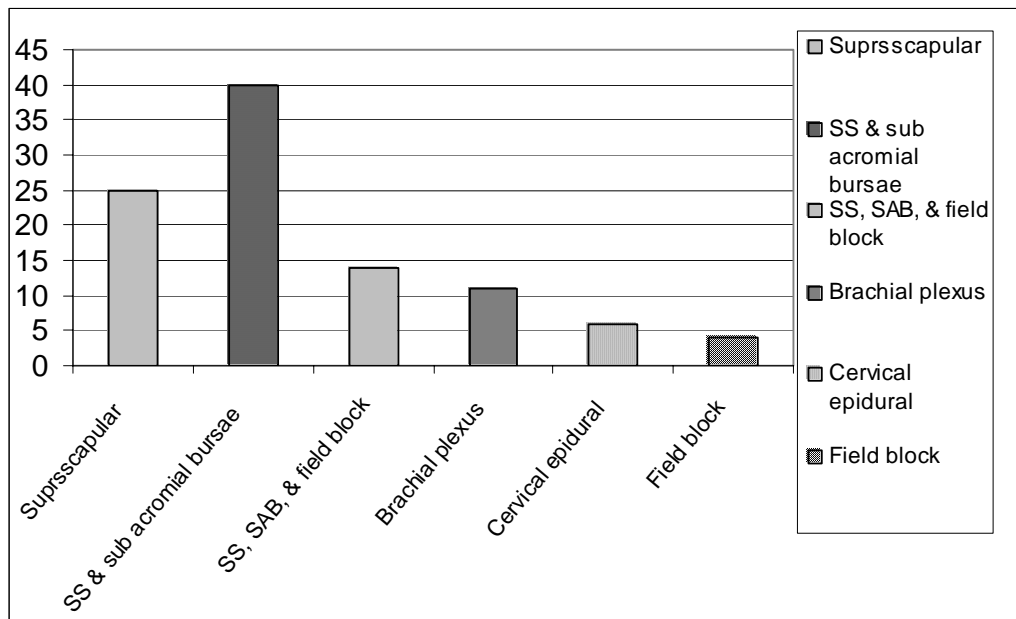
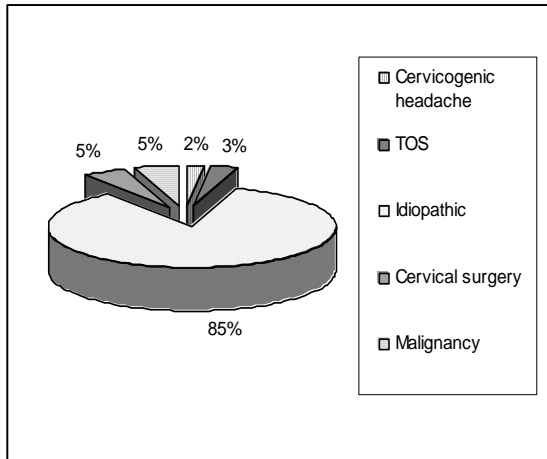


Figure 1. Different interventional techniques.



**Figure 2.** Etiology of chronic shoulder pain.

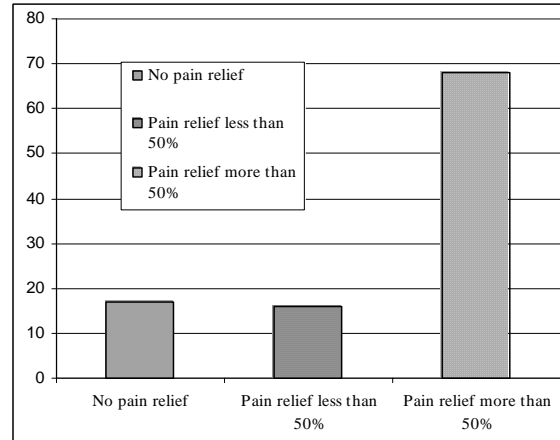
equality of variances, and the paired *t*-test for comparing pain score means in various times were performed in this study. A *P*-value < 0.0001 was considered statistically significant.

### Results

Seven patients excluded from this study, based on the factors previously mentioned. Sixty-three patients remained to conduct the study. Average age of patients was  $49.2 \pm 13.7$  years (64% females and 36% males). Average period of suffering was  $48.9 \pm 18.2$  months. Details of pain etiology and location are shown in Figure 2. A diverse degree of motion restriction was found in 60% of patients, trapezeus spasm in 11%, and shoulder joint degeneration signs (noise or crepitation) in 55% of the patients. Two percent of patients had significant findings in EMG 3.1% had shoulder surgery, and 67% became completely pain free after the first week (Table 1). Forty percent had 1 – 30% pain relief according to VAS (Figure 3), 3.1% were referred for thoracic outlet syndrome (TOS) surgery, 3.1% for radiation/chemotherapy, and for the rest neural block was continued for 1 – 2 further sessions. Pain relief after 4 weeks was 73% and after 12 weeks was 81% .

### Discussion

This study demonstrates the effectiveness of steroids in managing chronic shoulder pain,



**Figure 3.** Results of management after twelve weeks.

through interventional techniques.

There is a sort of similarity between our clinical study and the study carried out by Jones et al.<sup>5</sup> But the difference between the two studies is that our patients were not in a primary care state and had received several forms of medical therapy before the study. Besides, more patients took part in our study.

In comparison to Lewis’s<sup>6</sup> study, both concerned chronic cases but differed concerning etiology, which was rheumatoid arthritis in Lewis’s study. Moreover, they used phenol but we didn’t, and it is not clear whether neurolytic agents are essential in such cases. Additionally, locating the circumflex branch of suprascapular nerve (SSN) is difficult in practice and potentially harmful for the surrounding tissues, unless they have been already disturbed due to the pathology of joint destruction. Hence, the target of therapy is set to reduce the pain not to save the joint function.

In those studies which used LA without steroids, long-lasting effectiveness should not be expected because they temporarily break the pain circuit, relief the spasm, and improve the circulation but have no antiinflammatory effects.

In those studies using hydrocortisone, long-lasting effects through one injection should not be expected either because it is weaker and/or has short-lasting effects compared to triamcinolone.<sup>11, 19</sup> Oral steroid therapy,<sup>16</sup> like prednisolone, is not only less effective, but also may cause numerous

**Table 1.** Comparing pain score in intervals after injection.

	Time			P-value
	After 1 week	After 4 weeks	After 12 weeks	
Pain score (scale = 100)	21.1 ± 10.9	18.6 ± 7.6	16.5 ± 4.5	0.038
Pain relief	67%	73%	81%	0.0001

side effects.<sup>18</sup>

Intraarticular steroids could reduce pain and inflammation and their complications are rare unless numerous injections are given.<sup>19</sup>

Of course, the phenomenon of pain is a subjective problem. So the objectivity of this study was based on the improvement of the range of motion of the affected shoulder.

In our study, 67% of patients were cured with only one session block in the first week and accordingly there was no significant change in pain level between the first, fourth, or twelfth week after therapy, if patients follow the supplementary medical exercise and special health-care instructions. Therefore, it is concluded that if pain relief is obtained in the first week, it could last permanently unless other problems occur later.

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