

Injection in Facet Joint Arthropathy

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ABSTRACT

Background: Facet syndrome is an articular disorder related to the lumbar facet joints and their innervations, and produces both local and radiating pain. **Objective:** The purpose of this study was to evaluate the outcome of steroid injection in treatment of facet joint arthropathy. **Patient and Methods:** This study was held on 23 patients suffered from chronic low back pain due to facet arthropathy at Al-Azhar University and Alharam Specialized Hospitals. There were 11 males and 12 females with mean age 46.27 years (28 to 60 years). History, clinical examination, x-ray, MRIs were done to all patients. **Results:** Pain was evaluated by VAS. The mean VAS pre injection was 8.1 ± 0.83 ranging from 6:10. Immediately post injection, the mean was decreased to 3.7 ± 0.85 ranging from 2:5. Six weeks after injection the mean was decreased to 3.6 ± 0.98 ranging from 2:5. Twelve weeks after injection the mean was elevated to 5.3 ± 0.91 ranging from 4 to 6. The mean ODI improved from 36.5 ± 6.9 to 21.1 ± 4.2 three months post injection. **Conclusion:** intra-articular facet joint injection is crucial in the diagnosis and treatment of facet joint syndrome. It is an easy to perform and effective treatment for temporary pain relief. The pain relief is sustained longer in patients with grade G₂ and G₃ of facet joints

Keyword: facet joint, intra-articular injection, facet arthropathy, steroids.

INTRODUCTION

The identification of the facet joints as a source of back pain was demonstrated in 1976 with the experimental induction of pain through direct injection of saline solution into the facet joints of healthy individuals^(1,2). Subsequent studies involving the intra-articular injection of anesthetic solution to relieve pain supported the theory of a possible facet component in the origin of low back pain⁽³⁾.

The diagnosis of facet joint arthritis is based on clinical criteria. However, the use of invasive diagnostic tests, such as the provocative test and pain relief test, has grown over the years^(4,5).

Treatment for facet joint arthritis is mainly conservative, involving medication and rehabilitation⁽⁶⁾. However, minimally invasive procedures have been used with increasing frequency for direct treatment of the pain site and are currently among the most commonly used procedures for the treatment of pain⁽⁷⁾. One such treatment is medial branch block through radiofrequency denervation and facet joint injections⁽⁸⁾. The aim of intra-articular facet injections with corticosteroids in combination with an anesthetic solution is to block the nociceptors and produce an anti-inflammatory effect⁽⁸⁾.

AIM OF THE WORK

The purpose of this study was to evaluate the outcome of steroid injection in treatment of facet joint arthropathy.

PATIENT AND METHODS

This prospective study was approved by the Ethical Committee of Al-Azhar University. A total of 23 patients with facet arthropathy were treated in Al-Azhar University and Alharam Specialized Hospitals. **All patients had signed an informed consent form.** We included patients with chronic low back pain due to facet arthropathy with failed conservative treatment for more than 6 months.

Exclusion criteria: (a) Known diagnosis of low back pain of spinal infection or neoplastic etiology, (b) Medically unfit patients as uncontrolled diabetes, systemic arterial hypertension, or glaucoma, (c) Pregnancy, (d) radiculopathy and (e) acute lumbar fractures. There were 13 females and 12 males with mean age 46.2 ± 5.1 years ranging from 34 to 55 years. History and local examination were done. The low back pain duration among the participants was 2.6 ± 0.7 years ranging from 1-4 years. The pain was aggravated by extension and flexion in all patients while by twisting in 11 patients (47.8%). The pain was radiating to buttocks in 16 patients (69.6%) and to thigh in one patient (4.3%). The pain was relieved by rest in 15 patients (65.2%). 7 patients (30.4%) had no response to medications and 16 patients (69.6%) had low response. X-ray and MRI were routinely done to all patients. Pain was evaluated by VAS and ODI scores pre and post injection. **Positioning:** The patient lies prone on the table with a pillow placed under the front of the abdomen for comfort. Fluoroscopy should be placed in a direct posteroanterior orientation with slight oblique position (figure 1).



Figure (1): C-arm fluoroscopy is in the oblique position.

Once the correct level is identified, tilting the X-ray beam caudally 20–30° allowing clearer delineation of the joint, described as a “Scotty-Dog” view (figure 2).



Figure (2): Scotty dog view ⁽⁹⁾

Technique:

In operation room aseptic technique is necessary. The skin is prepared above and below the level of injection (Figure3). The selected level is identified by “palpation of the spinous processes, and confirmed radiographically. The joints lay midway between and lateral to adjacent spinous processes. Once the entry point is confirmed, the needle is advanced in the line of fluoroscopy until bone is contacted and the position again checked radiographically to be directly over the joint (Figure 4). Therapeutic injection is then carried out. Withdraw the needle and apply a sterile dressing.



Figure (3): Under complete aseptic condition

Figure (4): Needle in facet joint.

Follow up

Patients were followed for a period of 12 weeks. The first visit post-injection was at the second week to assess the immediate effect of facet joint injection, while the second and third visits at the 4th and the 12th weeks respectively to assess the short-term effect. The improvement was assessed using the VAS for back pain and the Oswestry disability index for the functional outcome.

Statistical methods

Data were coded and entered using the statistical package SPSS (Statistical Package for the Social Sciences) version 25. For comparison of serial measurements within each patient the non-parametric Wilcoxon signed rank test has been used ⁽¹¹⁾. P-values less than 0.05 were considered as statistically significant.

RESULTS

During the period from April 2018 to April 2019 this study was carried out as an interventional prospective study on 23 patients with chronic low back pain. Study was conducted in Orthopedic Surgery Department, Sayed Galal University Hospital and Elharam Specialized Hospital and aimed at assessment of the outcomes of facet joint injection in the treatment of chronic low back pain. The mean age was 46.2 ± 5.1 years ranging from 34 to 55 years and according to gender distribution, they were 11 (47.8 %) males and 12 (52.2%) females.

Table (1): Demographic data among patients

Age (years)	Mean ± SD	46.2 ± 5.1	
	Range	34– 55	
Gender	Male	11	47.8%
	Female	12	52.2%

Pain was evaluated by VAS the mean VAS pre injection was 8.1 ± 0.83 ranging from 6:10. immediately post injection, the mean was decreased to 3.7 ± 0.85 ranging from 2:5. Six weeks after injection the mean was decreased to 3.6 ± 0.98 ranging from 2:5. Twelve

weeks after injection the mean was elevated to 5.3 ± 0.91 ranging from 4 to 6 with.

Table (2): Pain assessment by vas.

Score		Mean \pm SD	range
VAS	Pre injection	8.1 \pm 0.83	6-10
	Immediate after injection	3.7 \pm 0.85	2-5
	6 weeks after injection	3.6 \pm 0.98	2-5
	12 weeks after injection	5.3 \pm 0.91	4-6

Function was evaluated by ODI the mean ODI pre-injection was 36.5% ranging from 50:20 with SD 6.9. Immediately after injection the mean was decreased to 19.4 % ranging from 10:30 with SD 6.2. Six weeks after injection, the mean was decreased to 14.2 % ranging from 8:20 with SD 3.6. Twelve weeks after injection the mean was raised to 21.1 % ranging from 19 to 23.2 with SD 4.2.

Table (3): function assessment by ODI.

Score		Mean \pm SD	Range
ODI	Pre injection	36.5 \pm 6.9	20-50 %
	Immediate after injection	19.4 \pm 6.4	10-30 %
	6 weeks after injection	14.2 \pm 3.6	8-20 %
	12 weeks after injection	21.1 \pm 4.2	19-23.2 %

Table (4): Comparison between studies

Study	Number (male –female)	Mean age	Pre injection assessment	Post injection assessment
our study	23 (11-12)	46.2	pre vas 8.1 pre odi 36.5 %	T1 vas 3.7,T6 vas 3.6,T12 vas 5.3 T1 odi 19.4 %,T6 odi 14.2 % ,t12 odi 21.1
Toubar	58(26-32)	42.2	pre vas 4.86	T1 vas 4.29 , t12 vas 4.1, t24 vas 2.6
Rebiero	31(6-25)	63.4	pre vas 7	T1 vas 4, t4 vas 4 , t12 vas 4.7,t24 vas 5.3
sae-jung	32(17-15)	44	Pre vas 7.6 Pre odi 42.9 %	T4 vas 3.6, t12 vas 5.8 T4 odi 20.2 % , t12 odi 32.2 %

DISCUSSION

Based on controlled diagnostic blocks of facet joints, facet joints have been considered to be responsible for spinal pain in about 45 % of patients with low back pain. The exact source of pain in the facet joints is ambiguous. There is conflicting evidence in support of a relationship between radiographic facet joint abnormalities and facet mediated pain. This may partly be due to the poor reliability of the lumbar ‘‘facet joint syndrome diagnosis given to patients presenting with primary lower back pain complaints ⁽¹²⁾.

This study was carried out in Sayed Galal and Alharam Specialized Hospitals from April 2018 to April 2019. It included 23 patients with chronic low back pain that were treated with lumbar facet joint injection.

In our study, we used the visual analogue score and ODI score preoperative, immediately after injection, 6 weeks after injection and 12 weeks after injection to evaluate the efficacy of steroid injection in management of chronic low back pain related to facet arthropathy.

Ribeiro *et al.* ⁽¹³⁾ reported in using intra-articular facet joint injection of steroids in 31 patients the mean

preoperative VAS was 7 ± 1.2 . And dropped immediately after injection and 4 weeks after injection also to 4 ± 1 . While raised to 4.7 ± 1.2 after 12 weeks of injection, and raised to 5.3 ± 1.5 after 24 weeks of injection.

Sae-jung and Jirattanaphochai ⁽¹⁴⁾ reported in using intra-articular steroids injection in 66 patients the mean pre-operative ODI was 42.9 % with SD15.6, and dropped to 20.2 % with SD 8 after 4 weeks. While raised to 32.2 % with SD 15.6 after 12 weeks of injection

Sae-jung and Jirattanaphochai ⁽¹⁴⁾ also used VAS score in evaluation, the mean pre-injection VAS was 7.6 and dropped to 3.6 after 4 weeks of injection while raised to 5.8 after 12 weeks of injection. Our study was consistent with the previous two studies in good therapeutic response to intra articular steroids injection in patients with chronic low back pain related to facet arthropathy in short term follow up , while the therapeutic response decreased in long term follow up.

Toubar and Dawood ⁽¹⁵⁾ reported in facet joint steroids injection The mean preoperative Visual Analogue Score (VAS) was 4.86 ± 0.97 , the mean post

injection at one-week VAS was reduced to 4.29 ± 0.94 , at 3 months VAS mean was 4.11 ± 0.84 (Range, 3.78-4.43) and at 6 months it dropped to 2.64 ± 0.91 . Preoperative and after 6 months VAS changes were not significant. Our study differed from **Toubar and Dawood** ⁽¹⁵⁾ study in long term follow up, as in our study vas score elevated again while in Toubar study VAS score improved.

This study has points of strength as it is a prospective study and the cases were done by the same team. On the other hand, the limited number of cases and the short-term follow up are the two points of weakness of this study. The study assessed early outcomes only and there was no long-term follow up.

CONCLUSION

Intra-articular facet joint injection is crucial in the diagnosis and treatment of facet joint syndrome. It is an easy to perform and effective treatment for temporary pain relief. The pain relief is sustained longer in patients with MRI grade G₂ and G₃ of facet joints .

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