

Management of Sacroilitis by intra-articular steroid injectionPraveen Garg¹, Himanshu Popli^{2*}, R.K. Narula³¹Associate Professor, Rohilkhand medical college and Hospital, Bareilly, India²Resident, Rohilkhand medical college and Hospital, Bareilly, India³Professor, Rohilkhand medical college and Hospital, Bareilly, India

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Abstract

Introduction: Sacroilitis, a common feature of spondyloarthropathies, is an inflammation of one or both of sacroiliac joints. Etiologies include Ankylosing spondylitis, sacroiliac arthritis, osteitis condensans ilii, gout, osteoarthritis, tumors, trauma, pregnancy, septic arthritis and brucellosis. **Methods:** The study was conducted in the Department of Orthopaedics, Rohilkhand Medical College and Hospital from November 2018 to October 2019 after seeking clearance from the Institutional Ethical Committee. The aim of the study was to assess the functional outcome of Intra-articular Steroid Injection in management of Sacroilitis. **Results:** All the patients enrolled in the study showed difference in the pre-injection and post-injection visual analog scale (VAS) and Oswestry disability index (ODI) observed at Day 3 (3.10 ± 1.707) [22 ± 6.485], at 2 weeks (1.66 ± 1.236) [13.16 ± 6.619] and at 1 month (1.11 ± 0.319) [10.56 ± 2.323] which was found to be highly statistically significant ($P < 0.01$). **Conclusion:** Fluoroscopy-guided intra-articular corticosteroid injection in the SIJ found to be an effective therapy in patients with Sacroilitis, since most of the patients (84%) got relief from single intra-articular injection only. Therapeutic use of injection has been shown to have a positive impact on the outcome as patient's pain level (VAS) which was assessed and documented and there was also an improvement in the Oswestry disability index (ODI) due to relieve of pain. No post-operative pain or synovitis were reported.

Key words: Sacroilitis; Sacroiliac joint (SIJ); Visual Analog Scale (VAS); Oswestry Disability Index (ODI).

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Introduction

Sacroiliac joint (SIJ) found to be prime source of pain in more than 10% of cases with suspected SIJ pathologies. SI joint has a double-S orientation, with both vertical and anteroposterior variation[1]. The SIJ works within the loadbearing complex of the lumbosacral vertebrae, pelvis, and hip joints and for stability, they share numerous ligamentous structures and muscles with the posterior pelvic ring[2,3]. Etiologies includes Ankylosing spondylitis, sacroiliac arthritis, osteitis condensans ilii, gout, osteoarthritis, tumors, trauma, pregnancy, septic arthritis and brucellosis.

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The sacroiliac joint is commonly the first joint involved in AS and may also be the most painful symptomatically. Since most of the times aetiology of AS is unknown, genetic and environmental factors plays a major role. Management includes Nonsteroidal anti-inflammatory drugs (NSAIDs), corticosteroid and disease-modifying antirheumatic drugs (DMARDs) and fluoroscopy-guided intra-articular sacroiliac joint (IASIJ) steroid injection. Sacroilitis can be identified by plain radiographs, magnetic resonance imaging (MRI), and radionuclide bone scanning. Typical features include sclerosis, erosions, and ankylosis. Intra-articular steroid injection into the sacroiliac joint is one of the available treatment of choice for patients with Sacroilitis. The procedure is generally safe, can be done blindly. However, some intervention is essential for proper needle placement. Various guiding techniques are available such as fluoroscopy,

ultrasonography (USG), computed tomography (CT) and magnetic resonance imaging (MRI). These methods have included long acting corticosteroid and local anesthetic agents, especially those with long term effects like bupivacaine. Corticosteroids reduce the inflammation within the joint and local anesthetic blocks the lateral branches of the sacral dorsal rami which protects the volunteers from pain induced by stimulating the sacroiliac ligaments, but not from intra-articular pain[4], suggesting the joint has both ventral innervation and dorsal innervation.

Material and methods

A prospective Interventional study was conducted in the Department of Orthopaedics, Rohilkhand Medical College & Hospital, Bareilly International University, Bareilly for one year from November 2018 to October 2019. Patients aged 21-70 years of both genders who were diagnosed as a case of Sacroilitis based on the history, clinical examination and radiological investigation were included in the study.

Inclusion Criteria:

- Age between 21 and 70 years.
- Pain persists despite one month of conservative treatment.
- Radiological findings (X- Ray) showing degenerative changes in the SI joint.
- At least one of the following physical signs: Patrick's test/FABER, Gaenslen's test, Thigh thrust test, ASIS distraction (supine) and Sacral compression (side lying).
- Visual analogue scale >4.
- Sero-negative Spondyloarthropathy.

Exclusion Criteria:

- Patient receiving Immunosuppressants or Anti-coagulants, Diabetes Mellitus, Rheumatoid

arthritis, Allergy to Lignocaine, Haematological disorders (Coagulopathies), Severe cardiovascular conditions, Infections, HB <7 gm%, Pelvic Inflammatory disease and Pregnancy.

Injection Method:

Pre procedure protocol

- Informed and written consent was taken.
- Patient's pain level was assessed and a physical examination was performed.
- Drug sensitivity was done with 2% Lignocaine 0.1ml Intradermally.

Procedure

- Patients were made to lie prone on the fluoroscopy table.
- The fluoroscopy tube angle could only change to maximum 30° in the caudal direction and 30° in the cephalic direction.
- When the patient made prone-oblique, the posterior SIJ line was identified and divided into four sections.
- After infiltration of local anaesthetic at the needle entry point, a 22-gauge, 90-mm straight spinal needle was inserted into the middle portion of the sacroiliac joint.
- The needle was then pushed in at about 90° to the fluoroscopic beam, until it reached the ilium bone wall in the middle portion, contrast medium was injected (Fig.1).
- After the joint was outlined by contrast medium, 1.5 to 2.0 mL of 2% lidocaine and corticosteroid was injected.

Post procedure protocol

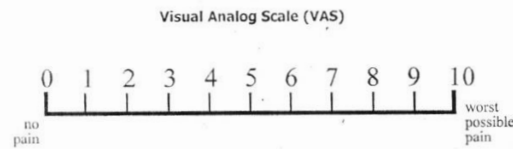
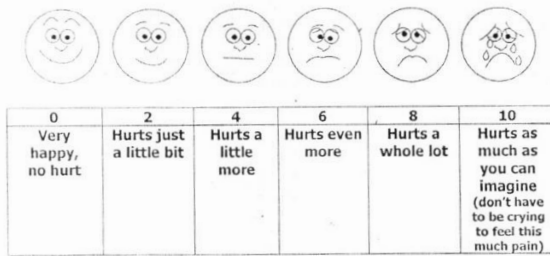
- Following sacroiliac joint injection, the patient's pain level was assessed and a physical examination was performed.



Fig 1: A 90-mm spinal needle was inserted into the middle portion of the sacroiliac joint. The needle was then pushed and contrast medium was injected. After the joint was outlined by contrast medium, 1.5 to 2.0 mL of 2% lidocaine and corticosteroid was injected.

Data Evaluation: The data was evaluated by Visual Analog Scale (VAS) & Oswestry Disability Index (ODI) and 't' test was used to assess associations of variables. A p-value < 0.01 was considered statistically significant.

Visual Analog Scale(VAS)



Oswestry Disability Index(ODI)

SECTION 1 - PAIN INTENSITY

- I can tolerate the pain I have without having to use painkillers.
- The pain is bad but I manage without taking painkillers.
- Painkillers give complete relief from pain.
- Painkillers give moderate relief from pain.
- Painkillers give very little relief from pain.
- Painkillers have no effect on the pain and I do not use them.

SECTION 2 - PERSONAL CARE (washing, dressing etc.)

- I can look after myself normally, without causing extra pain.
- I can look after myself normally, but it causes extra pain.
- It is painful to look after myself and I am slow and careful.
- I need some help, but manage most of my personal care.
- I need help every day in most aspects of self-care.
- I do not get dressed, wash with difficulty and stay in bed.

SECTION 3 - LIFTING

- I can lift heavy weights without extra pain.
- I can lift heavy weights, but it gives extra pain.
- Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned (e.g., on a table).
- Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned.
- I can lift only very light weights.
- I cannot lift or carry anything at all.

SECTION 4 - WALKING

- Pain does not prevent my walking any distance.
- Pain prevents me walking more than 1 mile.
- Pain prevents me walking more than 1/2 mile.
- Pain prevents me walking more than 1/4 mile.
- I can only walk using a stick or crutches.
- I am in bed most of the time and have to crawl to the toilet.

SECTION 5 - SITTING

- I can sit in any chair as long as I like.
- I can sit in my favourite chair as long as I like.
- Pain prevents me sitting more than 1 hour.
- Pain prevents me from sitting more than 1/2 an hour.
- Pain prevents me from sitting more than 10 minutes.
- Pain prevents me from sitting at all.

SECTION 6 - STANDING

- I can stand as long as I want without extra pain.
- I can stand as long as I want but it gives me extra pain.
- Pain prevents me from standing for more than 1 hour.
- Pain prevents me from standing for more than 30 minutes.
- Pain prevents me from standing for more than 10 minutes.
- Pain prevents me from standing at all.

SECTION 7 - SLEEPING

- Pain does not prevent me from sleeping well.
- I can sleep well only by using tablets.
- Even when I take tablets, I have less than 6 hours sleep.
- Even when I take tablets, I have less than 4 hours sleep.
- Even when I take tablets, I have less than 2 hours sleep.
- Pain prevents me from sleeping at all.

SECTION 8 - SEX LIFE (if applicable)

- My sex life is normal and causes no extra pain.
- My sex life is normal but causes some extra pain.
- My sex life is nearly normal but is very painful.
- My sex life is severely restricted by pain.
- My sex life is nearly absent because of pain.
- Pain prevents any sex life at all.

SECTION 9 - SOCIAL LIFE

- My social life is normal and gives me no extra pain.
- My social life is normal, but increases the degree of pain.
- Pain has no significant effect on my social life apart from limiting my more energetic interests, e.g., dancing, etc.
- Pain has restricted my social life and I do not go out as often.
- Pain has restricted my social life to my home.
- I have no social life because of pain.

SECTION 10 - TRAVELLING

- I can travel anywhere without extra pain.
- I can travel anywhere but it gives extra pain.
- Pain is bad but I manage journeys over 2 hours.
- Pain restricts me to journeys of less than 1 hour.
- Pain restricts me to short necessary journeys under 30 minutes.
- Pain prevents travel except to the doctor or hospital.

- The effect of pain on day to day life was measured by the Oswestry disability index under 10 headings as mentioned above.
- Where each section was given 10 points individually such that the maximum disability was 100% and least was 10 %.

Consider how much the "back (or leg) problem" has affected your day-to-day in the following questions:	
1 - Pain intensity	6 - Standing
2 - Personal care	7 - Sleeping
3 - Lifting weights	8 - Sex life
4 - Walking	9 - Social life
5 - Sitting	10 - Travel
Interpretation of the Oswestry Index results.	
0% to 20% - Minimal disability	
21% to 40% - Moderate disability	
41% to 60% - Severe disability	
61% to 80% - Very serious disability	
81% to 100% - Exaggerated symptoms	

Results

Table 1: Distribution of test performed at different visits

SN	Test	Pre- injection		3 days		2 weeks		1 month	
		No.	%	No.	%	No.	%	No.	%
1-	Tenderness	39	97.5	7	17.5	5	12.5	0	4.4
2-	*FABER	38	95	10	25	5	12.5	0	28.9
3-	Gaenslen	35	87.5	6	15	2	0.0	0	0.0
4-	Sacral Compression	23	57.5	5	12.5	0	0.0	0	0.0
5-	*ASIS Distraction	23	57.5	5	12.5	0	0.0	0	0.0
6-	Thigh Thrust	29	72.5	1	2.5	0	0.0	0	0.0

*FABER: Flexion Abduction External Rotation

*ASIS: Anterior Superior Iliac Spine

Table 2: Comparative Statistics of Visual Analog Scale (VAS) at Different Visits

Pre and Post Injection VAS	Mean	SD	't' value	'p' value
3 days (VAS - VAS1)	3.10	1.707	14.470	0.001**
2 weeks (VAS - VAS2)	1.66	1.236	22.549	0.001**
1 month (VAS - VAS3)	1.11	0.319	27.495	0.001**

*VAS: Pre-injection Visual Analog Scale

*VAS1: Post-injection Visual Analog Scale at Day 3

*VAS2: Post-injection Visual Analog Scale at 2 weeks

*VAS3: Post-injection Visual Analog Scale at 1 month

** p value < 0.01

Table 3: Comparative Statistics of Oswestry Disability Index (ODI) at Different Visits

Pre and Post Injection ODI	Mean	SD	't' value	'p' value
3 days (ODI - ODI1)	22.00	6.485	13.964	0.001**
2 weeks (ODI - ODI2)	13.16	6.619	21.800	0.001**
1 month (ODI - ODI3)	10.56	2.323	21.161	0.001**

*ODI: Pre-injection Oswestry Disability Index

*ODI1: Post-injection Oswestry Disability Index at Day 3

*ODI2: Post-injection Oswestry Disability Index at 2 weeks

*ODI3: Post-injection Oswestry Disability Index at 1 month

** p value < 0.01

Discussion

However, some studies included patients as low as 18 years of age in their evaluation, results by F. D. O'Shea et al[5] have reported an age profile and average age of patients similar to ours. In the present study, majority of patients were males (62.5%). Klauser et al [6] revealed equal distribution of the Sacroilitis based on the patients' gender. Despite this, some variations were seen in the gender distribution of Sacroilitis based on the etiology of Sacroilitis. In the present study, non-infectious inflammatory etiologies were usually associated with sacroilitis, whereas infectious and degenerative causes were less frequent. Xiong et al[7] concluded a younger age for the clinical presentation of ankylosing spondylitis in males than in females. Half

of the patients in our study had bilateral Sacroilitis (50%). Gheita et al[10] reported bilateral Sacroilitis in only 20% of the patients. Leclerc-Jacob et al[8] reported bilateral Sacroilitis in 14 of 17 patients, their outcome revealed that 88% patients of Sacroilitis had non-infectious inflammatory causes and should be contemplated for the diagnosis of these patients. In the present study, most of the patients were first managed conservatively either by NSAIDs alone (85%) or in combination with steroids (10%) and DMARDS(5%). In the present study, the haematological profile of patients suggested mild anaemia and slightly prolonged erythrocyte sedimentation rate. Acute and Chronic Infections like tubercular ruled out by polymorphs,

lymphocytes, CRP and ESR. Corticosteroid injection and synoviorthesis are well-known efficient treatments for peripheral arthritis. However, the deep location of the sacroiliac joint is apparently less favourable to these techniques. Using a puncture technique adapted to sacroiliac joint conditions made corticosteroid injections possible and efficient, obtaining 81 % good results at 1 month but failures were also frequent in old SAP, and there were no notable complications. **Karabacakoglu et al**[9] found that fluoroscopy-guided intra-articular corticosteroid instillation in the SIJ may be regarded as an effective therapy since there was a 90.9% (20 of 22 joints) reported improvement. In this study, most of the patients (84%) got relief from single intra-articular steroid injection only. Following sacroiliac joint injection, the patient's pain level (VAS) and Oswestry disability index (ODI) were assessed and documented according to the format and need for subsequent injections were also assessed. However, no serious adverse effect was noted in any case[10].

Conclusion

From the study we concluded that Sacroilitis is a disease of young age and is commonly seen in people with age group of 21-30 years, occurs most commonly in young males. Sacroilitis is a common entity in overweight and obese people. It was seen that there was a more frequent association of Sacroilitis with axial spondyloarthropathies. It was found that bilateral involvement was more common than unilateral. It was noticed that patients who underwent SIJ injection had a superior functional outcome as per the recovery seen in the VAS and ODI scores. In our opinion, the SIJ injection therapy could be advocated as a treatment modality in management of Sacroilitis, especially in grade 2 to 4 and for those patients suffering from it for long period of time. Also patients who underwent even a single SIJ injection had more reduction in pain during their follow up as judged by Visual Analog Scale. SIJ injection is an effective treatment option for Sacroilitis as it provides a notable symptomatic improvement without any severe adverse effects.

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