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Original research article

Sacroiliac joint disease a major differential diagnosis for chronic low back pain: How to diagnose and it's prevalence

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Abstract

Introduction: 15% to 25% of patients with low back pain suffer from Sacroiliac joint pain yet there is no standard long-term treatment. Current studies have demonstrated that clinical history, examination and radiology are insufficient to diagnose SIJ pain. To diagnose the SIJ disease it is possible with small-volume local anaesthetics blocks.

Material and Methods: This is a prospective interventional study conducted in the Dept. of Orthopaedics, Dhiraj Hospital, Vadodara between Sept. 2020 to june2022. Study was conducted on 55 patients. Then a diagnostic intra-articular SI joint injection was used to confirm the suspected diagnosis of SIJ dysfunction.

Result: Prevalence was found to be 13.3%. Patient presented with visual analogue score (VAS) of 2 in 33.3%, 3 in 20%, 4 in 16.7%, 5 in 3.3%, 1 in 3.3%. One hour after injection VAS score was reduced in 40% patients. After one week VAS score was reduced in 23.3% of patients, TIFD after one hour was reduced in 23.3% patients and after one week TIFD was 13.3%.

Conclusion: The SIJ disease must be considered as a differential diagnosis of low back pain. Failure to do so will yield unsatisfactory out comes in patients with chronic idiopathic low back pain. Intra-articular injection provides the best method for obtaining diagnosis when performed under fluoroscopic guidance.

Keywords: Sacroiliac joint, low back pain, intra-articular injection

Introduction

Sacroiliac joint pain and Low back pain is a subject under debate with researchers suggesting SIJ pain as a major contributor to the low back pain [1]. The reports suggests that13% of patients with chronic low back pain have their origin at the SIJ [1].

WHO (World Health Organization) explains symptoms of low back pain as pain felt in the lumbosacral region (ICD-10-M54.5). Back pain is highly associated with disability and it is seen in daily OPD, back pain affects 80% of population at some point of their life in some form or the other. In USA, the lifetime percentage prevalence of back pain was found to be 54 to 80%, whereas the prevalence of chronic LBP is 15% [2].

SI joint pain is defined as pain localized to the joint per se which is reproduced by stress and provocation tests. Pain is reliably relieved by selective infiltration of the SI joint with a local anaesthetic. A reference standard for diagnosing SIJ pain was recommended in 1994 by the IASP [3].

IASP's diagnostic criteria were:-

1. Pain present in the region of SIJ.
2. Stress over the SIJ that are selective for the joint reproduces pain.
3. Selective infiltration of the symptomatic joint completely relieves pain.

Recent research have superseded the IASP criteria for various reasons. Diagnostic injections must be performed under image intensifier because blind injections rarely succeed in placing injection within the SIJ space. The optimal technique was established in 1992. In USA the reported prevalence of SI pain among patients with low back pain varies from 16% to 30%. Unfortunately data is lacking for the prevalence of SIJ disease in chronic LBP in our country. Hence present study was carried out.

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Material and Methods

A prospective interventional study conducted in the Dept. of Orthopaedics, Dhiraj Hospital, Vadodara between Sept. 2020 to June 2022. Study was conducted on 55 patients who fulfilled Inclusion criteria. Then a diagnostic intra-articular SI joint injection was used to confirm suspected diagnosis of SIJ dysfunction.

Procedure

1. After obtaining consent, SIJ injection was performed in an operating room, with patient in prone position on a radiolucent table.
2. The patient's vitals were monitored throughout the procedure.
3. Needle insertion site was sterilised and anesthetised using local anaesthesia.
4. Skin was marked over the distal 1 cm of the SI joint.
5. A 22 gauge spinal needle was inserted distal to Posterior sacroiliac joint under fluoroscopy guidance. Then drug (plain Lignocaine 2% + 80mg Triamcinolone acetate) was injected slowly. After injection, surgeon tried to reproduce the pain by performing stress test.
6. Diagnosis of SIJ dysfunction is made if the patient experiences 75-80% pain relief for the normal duration of the anaesthetic. Per injection provocative test was performed and changes were noted.
7. Following the injection, patient is kept under observation for 30 minutes to look for any complications.
8. Patient was assessed again over the same parameters after 1 hour and 1 week.

Observation and Results

Our Study was conducted on 55 patients who fulfilled the inclusion criteria, 61.8% were female and 38.2% were male. 31 to 40 years of age population were affected most common which accounts to 47%, followed by 21 to 30 years(33.3%) and finally 51 to 60 years accounting to 19.7%. Idiopathic low back pain was more common in house wives and farmers. 33.3% of patients had continuous pain, 30% had intermittent and 16.7% radiating type of pain. Majority (75%) of the patients had aggravated pain on routine work. Reliving factors were rest (43%), lying down (27%) and sitting (27%).

Table 1: Distance between tip of finger to floor (TFID)

TIFD	After 1 hour	After 1 Week
Same TIFD	77%	87%
Reduced TIFD	23%	13%
P Value	<0.001	<0.001
Significance	Significant	Significant

Table 2: Comparison of Mean and SD

Statistical values	Pre Injection	After 1 Hour	After 1 Week
Mean	2.76	2.26	2.55
SD	2.16	1.65	1.82

Table 3: Pain Assessment based on VAS

VAS	After 1 Hour	After 1 Week
% of pts with reduced pain	43%	60%
% of pts with same pain	57%	40%
P Value	0.12	0.025
Significance	Not significant	Significant

Discussion

Our study shows female predominance with predominant occupation being housewife. According to De Palma *et al*. in similar study conducted on 156 patients showed female sex and low body mass index were predominant factor for SI joint disease which is in accordance with our study. Our study showed peak incidence in mid age group whereas De Palma *et al*. showed increased incidence with increasing age. Our study evaluated pain by visual analogue score and Distance of tip of index finger to floor for quantitative analysis, local anaesthetic was used for immediate diagnostic purpose and corticosteroids for potential long term pain relief, which eliminates the need of an additional injection with steroids at later time in those patients. Prevalence of SI joint disease in patients with chronic idiopathic low back pain is found to be 15.3% whereas the prevalence was between 16 and 30% in the studies conducted by De Palma *et al*. and Pascal *et al*. [18]. This suggests drop in prevalence rate among the low back pain patients. According to the table 2, 3 there was significant reduction in pain after intra articular injection which is in accordance to the studies conducted by Gunaidyn *et al*. where he studied 9 patients in prospective manner.

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Sacroiliac joint pain is difficult to distinguish from other forms of low back pain based on only history. Provocative tests done individually have low predictive value, but combined provocative tests can help ascertain a diagnosis. Our study involved stress test such as Patrick 4 test, Ganselen's test, pump-handle test in examination of chronic idiopathic low back pain. Ganselen's test was positive in 20%, Patrick 4 test was positive in 13.3% and Pump-handle test in10%. But no provocative test were significant for diagnosis. Maigne *et al*., assessed only the results of individual tests in relation to the reference standard and found that Sacroiliac Joint provocation tests were not predictive in ascertaining the diagnosis [4].
The outcome of sacroiliac joint injection was measured by visual analogue score, Wong-backer scale and Distance of tip of middle finger to floor by bending back keeping knee extended. Mean distance between tip of middle finger to floor is 2.76±2.16, 1 hour after sacroiliac joint injection the mean score was 2.26±1.65, on further follow up after 1 week score is 2.55±1.82. Tip of Middle finger Distance after 1 hour were normal in 77% and reduced in 23.3% patients and after 1 week it was normal in 87%, reduced in 13.3%. Reduction of distance after one hour is significant $p<0.001$, reduction after 1 week is also significant $p<0.001$. So by measuring distance we can quantitatively see outcome of our diagnostic and intervention, no other similar study is found so far.

Conclusion

The Sacroiliac Joint is a potential pain generator and it should be considered in all patients with low back pain. Failure to recognize and treat Sacroiliac Joint mediated pain will result in unsatisfactory outcomes. Standard clinical evaluation techniques are often limited in producing concrete evidence of SI joint pain. Intra-articular injection under fluoroscopy guidance proves as a best modality for diagnosis.

Limitations of the study

Low sample size and a follow up of just 2 years have provided limited data and this subject needs further study as it requires more expertise in evaluation of symptoms and signs after intra-articular injection.

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