Research Paper

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An Experimental Study To Determine The Efficacy of Fluoroscopy Guided Intraarticular Local Anaesthetic and Steroid Injection for The Diagnosis and Management of Sacro Iliac Joint Pain.

Medical Science

KEYWORDS : Sacroiliac Joint, Low Backache, Arthralgia, Fluoroscopy

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ABSTRACT

The Sacroiliac Joint is a common cause of mechanical, axial low backache. Physical examination and provocative tests help in the diagnosis but there can be false positive and false negative results. The targeted fluoroscopic guided intraarticular local anaesthetic and deposteroid injection has been found to be diagnostic and therapeutic. Some recent research has found poor evidence for its effectiveness. In this study we selected 76 patients with 3 or more positive provocative tests and gave them intraarticular injection to find out the efficacy for diagnosis and management of SI joint pain. The patients were followed upto 8 weeks after the injection. Pre and post injection VAS and Oswestry disability Index scores were recorded and compared. We found that the accurately placed fluoroscopic guided intraarticular local anaesthetic and steroid injection to be of good efficacy for the diagnosis and management of SI joint pain.

INTRODUCTION:

Studies have established intervertebral discs, facet joints and SI joint as the common causes of low back and lower extremity pain. The reported prevalence of SI joint pain among patients with axial low back pain below L5 varies between 16-30% (1-3)

The SI joint is the largest axial joint in the human body. It is auricular in shape and is classified as diarthrodial synovial joint but has limited mobility (4, 5) It differs from other joints in that it has both fibrocartilage and hyaline cartilage unlike other joints. Only the anterior part is a true synovial joint. The posterior part is a syndesmosis consisting of sacroiliac ligament, the gluteus medius, minimus and piriformis muscles. It provides stability to the pelvis and has a very irregular articular surface. The sacro-iliac joint is well innervated with nociceptive fibers (6) in its capsule and surrounding ligaments as well as intraarticular area. It has been reported to have nerve supply from ventral rami of L4 and L5, superior gluteal nerve, and the dorsal rami of L5, S1 and S2 (6, 7). However, there is also evidence that it is only supplied by the dorsal rami (6).

Pain originating from the SI joint is mainly localised in the gluteal region. Referred pain may be felt in the lower lumbar region, lower limb, groin, upper lumbar region, abdomen and rarely below the knees. It is more common in females due to the shape of pelvis and the ligamentous laxity.

Diagnosis of SI joint Pain:

The International Association for the Study of Pain(IASP) in 1994, recommended three criteria for diagnosing SI joint pain. Pain is present in the region of the SI joint. Stressing the SI joint by clinical tests that are specific for the joint reproduces the patient's pain and selectively infiltrating the putatively symptomatic joint completely relieves the patient of pain(8).

Based on the recent research the IASP criteria have been modified/ refined for a variety of reasons. The provocative tests have got a very poor diagnostic value when performed in isolation. Because of the size and mobility of the SI joint large forces are needed to stress the joint causing false negatives. If forces are exerted incorrectly, pain can be provoked in the neighbouring structures causing false positives. 2 studies have found 3 or more positive provocative tests resulted in specificity and sensitivity of 79% and 85%, and 78% and 94% respectively(9,10). The 7 most commonly performed provocative tests which are specific for the SI joint are Compression test, Distraction test, Patrick's sign, Gaenslen test, Thigh thurst, Fortin finger and the Gillet test.

The IASP mandates that the pain should disappear after SI joint infiltration with local anaesthetics. Yet this technique remains controversial in view of false positives and false negatives. The false negatives can happen due to failure of infiltration through the entire SI joint complex while the false positives can happen due to overzealous use of sedation and local anaesthetics leading to their dispersal to other pain generating structures like surrounding muscles, ligaments etc. The use of fluoroscopy and other imaging for SI joint injection is highly recommended.

The aim of this study was to find out the efficacy of intrarticular local anaesthetic and steroid infiltration for the diagnosis and management of clinically proven SI joint pain patients referred to the Pain Clinic of a tertiary Care Service hospital.

Material and Methods:

All adults between the age group of 18-70yrs referred to the pain Clinic for Low Backache for duration of more than 1month in the period of 2 yrs from Jan 2014 to Dec 2015 were included in the study. A detailed history and physical examination was carried out. All the patients were made to fill up the Oswestry Low Backache Disability Questionnaire and the Oswestry Disability Index (ODI) was calculated for each of them. The VAS score for SI joint pain was also recorded. Oswestry Disability Index is a very important tool to measure a patient's permanent disability. It is measured using an Oswestry Low Backache Pain Disability Questionnaire. This questionnaire has 10 sections namely Pain Intensity, Personal care, Lifting, Walking, Sitting, Standing, Sleeping, Sex life (if Applicable), Social life and Travelling. For each section the total score can be a maximum of 5 and thus the ODI is calculated as score divided by total possible score and multiplied by 100 to give the percent disability. The disability is interpreted as 0-20%: Minimal disability, 21-40%: Moderate disability, 41-60%: Severe disability, 61-80%: Crippled and 81-100%: Bed bound patients

The patients who had 3 or more positive provocative tests for the SI joint pain were diagnosed as suffering from SI joint pain. The patients with ODI score of less than 40 or those who had not been given an adequate trial of conservative management were started on NSAIDs, PCM and specific SI joint exercises for 2 weeks. The patients with an ODI score of more than 40 and in whom a trial of conservative treatment had failed were subjected to fluoroscopic guided SI joint infiltration.

The lower 1/3rd of the joint was targeted while using a contralateral oblique view. The intraarticular needle tip placement was confirmed by instilling 0.5mL of the radiographic contrast and checking the intraarticular spread using both anteroposterior and lateral views. Once confirmed a 2mL mixture of 0.25%bupivacaine and 40mg of methylprednisolone acetate was injected into the joint. The injection was supposed to be diagnostic of SI joint pain if the patient got atleast 70% pain relief after the infiltration. The patients were followed up for the pain and their disability for 8 weeks after the injection. The ODI and VAS scores were recorded at the time of initial presentation and then again after injection. The VAS scoring was recorded 4hrs after the injection. At 2 weeks and 4 weeks both VAS score and ODI were recorded.

After 8 weeks the patients who had a significant improvement were asked to follow up at the Pain Clinic every 6 months. The patients who had a limited pain relief lasting for a few hours only were either given a repeat injection or prepared for neuroablative procedures assuming a degenerative SI joint. The patients who didnot benefit from the injection at all were considered as not suffering from SI joint pain/ dysfunction and were re examined and considered for other differential diagnosis.

OBSERVATIONS AND RESULTS:

A total of 636 patients were referred for Low Backache to the Pain Clinic in the duration from Jan 14 till Dec 2015. 89 of these had 3 or more positive provocative tests for SI joint. 13 of these patients improved with a trial of conservative management.

Finally 76 patients were selected for Intraarticular SI joint injection. The data on age, gender, SI joint provocative tests, VAS score and ODI index were recorded. There were34 males and 42 females in the study. The mean age of the patients was 44.97 years. The preinjection mean VAS score was 60.66, which came down to a median of 17.76 after the injection. The preinjection ODI was 55.16 which came down to 24.39 after the injection as shown in Table 1.

Table 1(Descriptive Statistics)

	N	Mean	Std Deviation	Minimum	Maximum	Percentiles		
						25th	50th	75th
Age	76	44.97	12.60	20	70	37.00	45.50	54.75
VAS Pre	76	60.66	9.03	40	80	52.50	60.00	70.00
ODI Pre	76	55.16	6.13	40	66	52.00	56.00	58.00
VAS Median	76	17.76	15.26	0	60	10.00	10.00	20.00
ODI Mean	76	24.39	12.53	5	60	15.75	20.00	29.25

The Preinjection VAS score was compared with the post injection VAS median and VAS average. Similarly the preinjection ODI was compared with the postinjection Mean ODI. The Wilcoxon Signed Rank test was used to find out the significance of difference between the scores. The difference between the preinjection and post injection VAS scores and the ODI were found to be statistically significant as shown in Table 2.

Table 2(Test Statistics[a]) a: Wilcoxon Signed Rank Test, b: Based on positive ranks

	VAS median-VAS pre	VAS Average-VAS Pre	ODI Mean- ODI Pre
Z	-7.308[b]	-7.581[b]	-7.326[b]
Asymp Sig. (2 Tailed)	.000	.000	.000

DISCUSSION:

The SIJ is a cause of mechanical, non radicular, axial backache which affects Activities of Daily Living(ADL) when severe. The targeted intraarticular delivery of steroids and local anaesthetics has been found to be effective.

The data for effectiveness of this injection has been showing mixed evidence between individual studies(11,12) and systemic reviews(13-15). In a recent systemic review, Hansen et al (16) found the evidence of intraarticular steroid is poor for short term as well as long term pain relief. This could be because of literature deficiency and well controlled randomised studies. However, the diagnostic accuracy for intra-articular injections was found to be good by Simopoulos et al. (17). Overall, the evidence for diagnostic accuracy for sacroiliac joint pain was found to be Level II-2 (18).

The lack of strong evidence in favour of therapeutic benefit of Intraarticular SIJ injection may be due to improper needle placement into the joint, incorrect clinical diagnosis or in cases of degenerated or unstable SI joints, wherein neuroablative procedures will be more helpful.

The accurate placement of medication within the SI joint is possible in only 12% patients without fluoroscopy (19) while the accuracy increases to 97% on using the fluoroscopy (20). The ultrasound can also be used to identify and inject the SI joint. Therefore imaging in some form is absolutely essential for an accurate SI joint injection.

In our study all the patients underwent detailed clinical examination and only those patients were chosen for injections that had atleast 3 positive provocative tests. Moreover all the injections were done using fluoroscopic guidance and radiographic contrast was used to confirm the intraarticular needle tip placement in anteroposterior and lateral views before giving the local anaesthetic and steroid injection.

The results suggest that accurately placed intraarticular steroid injection gives good short term therapeutic benefit in patients who have been appropriately chosen based upon good history, clinical examination and SI joint provocative tests.

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