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RESEARCH ARTICLE

A STUDY OF PREVALENCE OF SACROILIAC JOINT DISEASE IN CHRONIC IDIOPATHIC LOW BACK PAIN PATIENTS.

Dr.Sudhir Kumar Rawat, Dr.Ashok Vidyarathi, Dr.Arvind Kumar, Dr Munir Upadhyay, Dr Amit Patel, Dr Mikir Soni, Dr Jainish Patel.

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Corresponding Author

Dr.Sudhir Kumar Rawat.

Abstract

Introduction: Sacroiliac joint (SIJ) pain is a challenging condition affecting 15% to 25% of patients with axial low back pain, for which there is no standard long-term treatment. Recent studies have demonstrated that historical, physical examination findings and radiological imaging are insufficient to diagnose SIJ pain. The most commonly used method to diagnose the SIJ as a pain generator is with small-volume local anaesthetics blocks.

Material and methods: This was **prospective analytical study** conducted in the Department of Orthopaedics, N.S.C.B.M.C, Jabalpur. Between Sept. 2012 to Aug 2013. **S**tudy was conducted on 30 patients who fulfilled Inclusion criteria of chronic idiopathic Low Back pain were material for this study. Then a diagnostic intra-articular SI joint injection was used to confirm a suspected diagnosis of sacroiliac joint dysfunction.

Result: Prevalence of SI Joint Diseases of patients of Chronic Idiopathic Low back pain in and around Jabalpur is 13.3% (4/30) Patient came with chronic low back pain of visual analogue score (VAS) of 2 in33.3%, 3 in 20%, 4 in 16.7%, 5 in 3.3%, 1 in 3.3%.On follow-up after one hour (VAS) score was reduce in 40%(12/30) patients. After one week (VAS) score was reduced in 23.3%(7/30) patients ,TIFD after one hour was reduced in 23.3%(7/30) patients and after one week TIFD was 13.3%(4/30)

Conclusion : The SIJ is a potential pain generator that must be considered within the differential diagnosis of low back pain. Failure to recognize and treat SIJ mediated pain will result in unsatisfactory out comes in a subset of patients who suffer chronic idiopathic low back pain. Standard clinical evaluation techniques are often limited in producing concrete evidence of SIJ pain. Intra-articular injection provides the best means of obtaining diagnostic certainty when performed correctly under fluoroscopic guidance.

Introduction:-

The relationship between the sacroiliac joint pain and low back pain has been a subject of debate with some researchers regarding SIJ pain as a major contributor to the low back pain problem [(1)] with others regarding it as unimportant or irrelevant [(2)]. It is now generally accepted that about 13% of patients with chronic low back pain have the origin of pain confirmed as the SIJ [(3)].

The World Health Organization (WHO) explains the symptom of low back pain as pain felt in the loin i.e. lumbosacral region (ICD-10-M54.5). Back pain is highly associated with disability and it often places a heavy burden on the medical system [(4)], Back pain affects 80% of the population at some time, in some form or the other

during the course of their life and is one of the most frequent reasons both for consulting a primary care physician and for being absent from work [5]

Back pain is a leading cause of disability in USA rendering 1.1 million people disabled (Labour Force Survey, 2006).

In USA, the lifetime percentage prevalence of LBP has been found to be 54 to 80% (NIOSH, 1997), whereas the prevalence of **chronic LBP is 15% (Manchikanti L et al 2009)[6]**.

SI joint pain is **defined** as pain localized in the region of the SI joint, reproducible by stress and provocation tests of the SI joint and reliably relieved by selective infiltration of the SI joint with a local anaesthetic. The SIJ has long been considered an important source of low back pain because of the empirical finding that treatment targeting the SIJ can relieve pain.

A reference standard for diagnosing SIJ pain was recommended in 1994 by the International Association Society for the Study of Pain (IASP) [7].

IASP's three diagnostic criteria were:-

1. Pain is present in the region of the SIJ.
2. Stressing the SIJ by clinical tests that are selective for the joint reproduces the patient's pain.
3. Selectively infiltrating the putatively symptomatic joint completely relieves the patient of the pain.

Based on recent research, the IASP criteria have been superseded for a variety of reasons. Diagnostic injections must be performed under image intensifier control because blind injections rarely succeed in placing injection within the SIJ space [8,9].

The optimal technique of injection was established in 1992[10] and is described in the current edition of the practice guidelines issued by the International Spine Intervention Society [11].

Depending on the diagnostic criteria employed (clinical examination, intra-articular test blocks, medical imaging), the reported prevalence of SI pain among patients with axial low back pain varies between 16% and 30%.[12–14]

Unfortunately there is no data available for the prevalence of chronic LBP in the our country.
So present study was carried out.

Material and methods:-

The Sacroiliac Joint Injection Procedure:-

- The Sacroiliac Joint injection procedure was performed in an operating room, after informed consent obtained. The patient lied in prone position on the radiolucent table. Pillow was placed under the hips for patient comfort.
- The patient's vitals (e.g. pulse rate and blood pressure) were monitored throughout the procedure.
- An intravenous line was inserted to deliver medication to help the patient relax. Needle insertion site was anesthetised using local anaesthetic.
- Skin was marked over the distal one cm of the SI joint.
- A 22 gauge spinal needle was inserted to **distal Posterior sacroiliac joint** under fluoroscopy guidance. Then drug was injected slowly Diagnostic medications (xylocard 2% + 80mg Triamcinolone acetate) was injected into the joint. After the 2% Xylocaine+ 80mg Triamcinolone acetate was injected, the patient was asked to try and reproduce the pain by performing normally painful activities/stress test of SI joint.
- If the patient experiences 75-80% pain relief for the normal duration of the anesthetic, a diagnosis of SI joint dysfunction is made. Perinjection provocative test was performed and changes were noted. Patient was assessed again on same parameter after one week
- Following the injection, the patient usually remains for 30 minutes to ensure that there are no immediate complications or adverse reactions, such as allergic reaction or leg weakness / numbness.

Observation and Table:-

- Our Study was conducted on 30 numbers of patients of chronic idiopathic Low Back Pain, in them most commonly 63.3% were females (19/30) and 36.6% were males (11/30).
- Most common age group was between 31to40 that is 37%(11/30), then were age group between 21to30 that was 23.3%(7/30), third was 51to60 age group 13.3%(4/30)
- In them most common were females 63.3% (19/30) and males were36.6% (11/30).
- Chronic idiopathic low back pain was more common in house wife 50% (15/30), farmer 20% (6/30) , carpenter 6.7%(2/30), labour, clerk , student, were 3.3%(1/30)
- Most common type of pain was continuous 33.3%, intermittent 30% and radiating was 16.7% with most commonly stabbing in nature 43%, throbbing 16.7% and burning in nature in 3.3%
- Routine work aggravated pain about 75% (18/30), exercises 25% (6/30).
- Relived by rest 43%(13/30), lying down 27% (8/30) and sitting 27% (5/30)
- Numbness was in 17% (5/30) patients
- Tingling sensation in lower limb were 13.3%(4/30)
- On follow up :

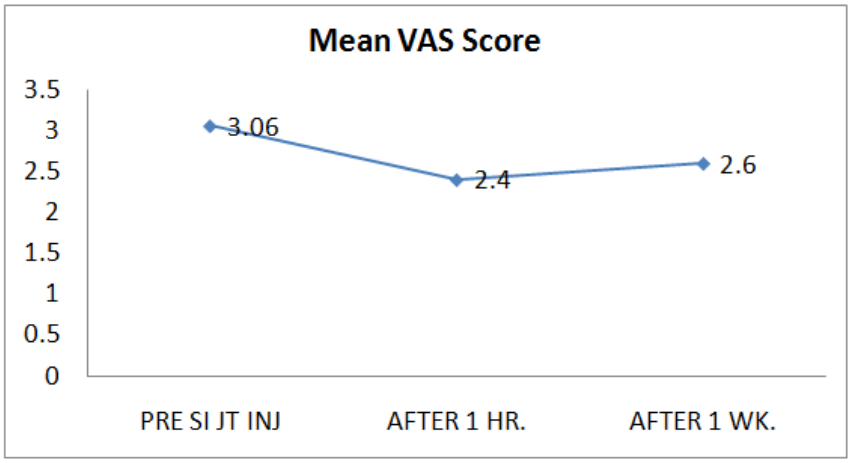
Distance between tip of finger to floor (cm)(TIFD)

TIFD		
TIFD	After 1 hour	After 1 week
Reduced TIFD in % of cases	23%	13%
Same TIFD in % of cases	77%	87%
p value	< 0.001	< 0.001
Significance	Significant	Significant

Follow up on basis of TIFD after 1 hour were normal in 77% and reduced in 23.3% patients and 1 week follow up normal was 87%, reduced in 13.3%. mean pre-injection is 2.76 SD 2.16, mean after 1 hour of injection is 2.26 SD 1.65,mean after 1 week is 2.55 SD 1.82, reduction after one hour is significant $p<0.001$,reduction after 1 week is also significant $p<0.001$

Pain (VAS Score)		
Pain (VAS Score)	After 1 hour	After 1 week
Reduced Pain in % of cases	43%	60%
Same pain in % of cases	57%	40
p value	0.12	0.025
Significance	Not significant	Significant

The change in mean VAS score from pre injection to after one hour is statistically not significant but after one week it is significant $p<0.025$.



- Follow up on basis of VAS Score after 1hour same as pre-injection were 40% (12/30) rest 60% reduced pain, after 1 week pain was same as pre-injection in 57%, rest 43% patients reduced pain.

Disscussion:-

In present series females were 63.3% (19/30) and males were 36.6% (11/30). According to De Palma, et al in (2012)[16]conducted study on 156 cases concluded that female gender and low Body Mass Index are associated with sacroiliac joint diseases. So according to our study, female incidence is concerned present series does show similar results.

The age group in this study ranged from 20-60 years, from this mean age 39.5±11.7 years, the highest incidence was seen in age group 30-40 years with incidence of 36.7%, the incidence of sacroiliac joint diseases gradually decreases on moving towards both higher age group and lower age group. So, an incidence of sacroiliac joint diseases was minimum at extremes of age. As far as age group of incidence is concerned present series does not show similar result to De Palma et al. (2011)[17] where it was studied on 156 patients reported that increased age was associated with increased probabilities of facet joint pain and sacroiliac joint pain as the source of low back pain until approximately age 70 and decreased probability of Prolapse intervertebral disc. The difference in sample size and study design could be a factor responsible for this difference.

Present series is prospective analytical study of 30 patients, were conducted and diagnosed with single Sacroiliac joint diagnostic block under fluoroscopy guidance with radio-contrast dye and injected Local Anaesthetic drug (2% lidnocaine) and 80 mg Triamcinolone acetate evaluated on visual analogue score for pain 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 patient who receive pain relief from initial local anaesthetic injection, Prevalence of Sacroiliac joint pain in chronic idiopathic low back pain is 13.3%. The sacroiliac joint accounts for approximately 16% to 30% of cases of chronic mechanical low back pain Pascal Vanelderen, et al[18] in 2010, in current series prevalence is low compare to above study. Different studies in range of prevalence of 16%-30% are A retrospective study by Bernard and Kirkaldy-Willis [19], in 1987 who found a 22.5% prevalence rate in 1293 adult patients presenting with LBP, Diagnoses in this series were based predominantly on physical examination, it differ from current series due to outcome measured on physical examination. Schwarzer et al.[20], in 1995 conducted a cross-sectional, analytic study of 43 patients with chronic axial LBP principally below L5–S1 , in this study 30% of patients were diagnosed with Sacroiliac joint pain based on diagnostic block. In this study prevalence was high compare to present series because patient's selection criteria, in our series only patients of chronic idiopathic low back were selected. Maigne et al, in 1996 [21] Conducted Prospective study assessing the prevalence of Sacroiliac joint pain using double blocks 67 patients with chronic unilateral LBP without extension below the knee of 54 patients completing the study, 19 experienced good pain relief with the screening block, and 10 of these (18.5%) reduced 2 hours pain relief after the confirmatory block, Prevalence of Sacroiliac joint pain 19%. It shows same prevalence to present series. Irwin et al [22]in 2007studied 158 patients, they underwent sacroiliac joint injections with average duration of symptoms being 34 months. Prevalence is 26.6% their prevalence is high compare to our series because duration of pain is short from 3 months to 24 months and small number of sample size. DePalma et al [16,17] in 2012, conducted study in 156 patients underwent diagnostic procedures and Prevalence was 18.2%.it is same to present series. Van der Wurff et al[23] in 2006 conducted analytical study on 140 patients with chronic low back pain visiting a pain clinic in the Netherlands; 60 patients entered the study. Prevalence was 38%. Its prevalence is high compare to our study and normal range of prevalence due to double sacroiliac joint block by short and long acting anaesthetics. Laslett et al[24], 2005 conducted prospective study of 48 patients and Prevalence was 33% higher to present series, Stanford and burnham[25], in 2010 conducted study on 34 patients with suspected unilateral mechanical sacroiliac joint pain, prevalence was 32%. Result of this study differ from current study had different inclusion and exclusion criteria, the duration of patients' symptoms was appreciably longer, differences in method and technique in the current study may account for the opposite outcomes from that earlier study. Studies with prevalence less than 16%,Pang et al[26] in 1998 conducted study of 104 consecutive adult patients who underwent spinal pain mapping were examined and analysed Prevalence is 10% of total sample here prevalence is similar to present series. Manchikanti L et al[27], in 2009 conducted study on 120 patients of chronic back pain of more than 6 months. The prevalence was of 10% is similar to present series.

In present series pain scale as per Visual Analogue Scale and Wongs-Bakers face rating scale mean VAS score was 3.06 ±SD 1.01 with VAS Score most commonly 2 were33% (10/30), 3 were in 30% (9/30), 4 were in 27% (4/30), 5 were 6.67%(2/30) and 1 was 3.3 % cases. Follow up on basis of VAS Score after 1hour same as pre-injection were 40% (12/30) rest 60% reduced pain, after 1 week pain was same as pre-injection in 57%, rest 43% patients reduced pain. Reduction in VAS score one week is significant $P<0.025$ Luuk-kainen et al.[28] in 1999 Randomized,

controlled study of 20 patients with seronegative spondylarthropathy received steroid and local anaesthetic; At 2-month follow-up, VAS pain scores decreased significantly in the steroid but not saline group. Injections were periarticular, not intra-articular, Fluoroscopy used to guide injections. Gunaydin et al[29] ,In 2000 Prospective observational study of 9 patients with spondylarthropathy. 16 joints injected with corticosteroid without local anaesthetic. 7of 9 patients reported improvement (mean decrease in VAS scores 49%, mean duration of pain relief 10.8±5.6 months). MRI used to guide injections. Luukkainen et al[30], in 2002 Randomized, controlled study 24 patients without spondylarthropathy, 13 patients received corticosteroid and Local anaesthetic, with 11 patients receiving normal saline and local anaesthetic. At 1-month follow-up, VAS pain scores decreased significantly more in the steroid group than in the saline group. Fluoroscopy used to guide injections. The present series shows similar significant reduction of VAS score on follow up.

Sacroiliac joint pain is difficult to distinguish from other forms of low back pain based on history; different provocative/stress test have been advocated. Individually, they have weak predictive value, but combined provocative/stress series of tests can help ascertain a diagnosis. In present series sacroiliac stress test such as Patrick 4 test, Ganselen's test, pump-handle test were done in physical examination of chronic idiopathic low back patients, in present study Provocation test ganselen's was positive in 20% (6/30), Pactick 4 test was positive 13.3% (4/30) and Pump-handel test 10% (3/30). No provocative test was significant in present study. Maigne et al,[31]1996 assessed only the results of individual tests in relation to the reference standard, found that Sacroiliac Joint pain provocation tests were not predictive. Dreyfuss et al[32] in 1996 results showed fairly high proportion of patients with sacroiliac joint pain due to strict selection criteria. There were no historical features, with none of the 12 sacroiliac joint tests and any combination of these 12 tests demonstrating worthwhile diagnostic value. In current study shows similar result. But Laslett et al[33], 2003 This study provides evidence that employing a McKenzie evaluation to exclude discogenic pain and a composite of three or more Sacroiliac Joint pain provocation tests has clinically useful diagnostic accuracy when compared with a reference standard. Result of this study differ from current study had different inclusion and exclusion criteria, and the duration of patients' symptoms was appreciably longer (median 22 months versus 4.2 months). In addition, the interpretation that the predetermined threshold of three or more positive Sacroiliac Joint tests implicates the as Sacroiliac a source of pain was applied only after excluding the disc as a pain source, in order to reduce expected false positive responses, Young et al 2003[34], prospective study of 81 patients, the positive correlation with strongest relationships between sacroiliac joint pain and 3 or more positive pain provocation tests. The differences in method and technique in the current study may account for the opposite outcomes from that earlier study.

In present series 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 with local anaesthetic and Trimacilone acetate is 2.26±1.65, on follow up after one week distance is 2.55±1.82, Follow up on basis of Tip of Middle finger Distance after 1 hour were normal in 77% and reduced in 23.3% patients and 1 week follow up normal was 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 outcome, so that we can reduce bias psychological, periarticular effects of local anaesthetic, no other similar study is found so it was not able to compare . But this can be used to measure outcome of sacroiliac joint injection. Its statically significant $p<0.001$ so it can be useful to measure outcome.

Conclusion:-

The Sacroiliac Joint is a potential pain generator that must be considered within the differential diagnosis of low back pain.

Failure to recognize and treat Sacroiliac Joint mediated pain will result in unsatisfactory out comes in a subset of patients who suffer chronic idiopathic low back pain. Standard clinical evaluation techniques (history, physical examination and radiological imaging) are often limited in producing concrete evidence of SIJ pain. Intra-articular injection provides the best means of obtaining diagnostic certainty when performed correctly. This requires fluoroscopic guidance.

Prevalence of sacroiliac joint disease in patient of chronic idiopathic low back pain in and around Jabalpur in present study is 13.3%

So sacroiliac joint disease must be considered with in the differential diagnosis of low back pain

Although the sample size of this study is too small to apply all the population of India, but this study will create some interest to work in this field further. The result of diagnostic blocks must be interpreted with caution, because false-positive as well as false-negative results occur frequently. Currently, the majority of scientific evidence points toward intra-articular Sacroiliac joint injection for short-term improvement.

Summary:-

A prospective analytical study was conducted in the Department of Orthopaedics, N.S.C.B. Medical College, Jabalpur. The period of study was between September 2012 and August 2013. To study the prevalence of sacroiliac joint disease in patient of chronic idiopathic low back pain in and around Jabalpur. A total of 30 cases were studied. The final result of present study is

- Study was conducted on 30 numbers of patients of chronic idiopathic Low Back Pain,
- In them 63.3% were females (19/30) and 36.6% were males (11/30).
- Chronic idiopathic low back pain was more common in house wife 50% (15/30), farmer 20% (6/30) , carpenter 6.7%(2/30), labour, clerk , student, were 3.3%(1/30)
- Most common type of pain was continuous 33.3%, intermittent 30% and radiating was 16.7% with most commonly stabbing in nature 43%, throbbing 16.7% and burning in nature in 3.3%
- Routine work aggravated pain about 60% (18/30), exercises 20% (6/30)
- Relived by rest and lying down 27% (8/30), sitting 17% (5/30)
- Numbness was in 17% (5/30) patients
- Tingling sensation in lower limb were 13.3%(4/30)
- Past history no patient had history of trauma, T.B, D.M and drug allergy, h/o of hospitalition ,osteoporosis were 3.3% (1/30)
- Personal H/o appetite, bowel, bladder were normal in every patients, addiction to tobacco were 23% (7/30), exercises – yoga and wait training were 6.67% (2/30), aerobic 3.3%(1/30)
- VAS Score 2 were33% (10/30), 3 were in 20% (6/30), 4 were in 17% (4/30), 5 and 1 was 3.3 % cases
- Provaction test ganselen's positive in 20% (6/30), Pactick 4 test 13.3% (4/30), Pump-handel test10% (3/30)
- Follow up on basis of VAS Score after 1hour same as pre-injection were 40% (12/30) rest 60% reduced pain, after 1 week pain was same as pre-injection in 57%, rest 43% patients reduced pain.
- Follow up on basis of TIFD after 1 hour were normal in 77% and reduced in 23.3% patients and 1 week follow up normal was 87%, reduced in 13.3%.
- Prevalence of chronic idiopathic low back pain is 13.3% in present study

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