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Case Study

Treatment of Chronic Sacroiliitis with Sacroiliac Joint Dysfunction-Physiotherapeutic Approach: A Single Case Study

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A B S T R A C T

Chronic sacroiliitis refers to long-term inflammation of one or both of the sacroiliac (SI) joints. Sacroiliitis can cause pain, stiffness, and difficulty in activities of daily living. The purpose of this study is to investigate the effectiveness of physiotherapeutic approach using ultrasound, mulligan mobilisation, and tailored exercises for treatment of chronic sacroiliitis with SI joint dysfunction. A 28-year-old male subject presented with pain and stiffness in the lower back with difficulty in walking and doing ADL. He was a known case of chronic sacroiliitis and was suffering from chronic pain for the past 6 months, was treated primarily with a course of NSAIDs, and interferential therapy which did not yield results. Later was given a joint block which did not resolve his pain or functional ability. He was referred back to the physiotherapy department. The subject was treated with ultrasound and Mulligan mobilisation techniques for 3 weeks. After the treatment period, the subject showed a much better prognosis on the pain scale with a reduction from 8 to 2 points on the VAS Scale and a better functional outcome. The subject was assessed pre and post intervention using three tools: Visual Analogue Scale (VAS), Oswestry Disability Index (ODI) and Roland-Morris Disability Questionnaire (RMDQ). The result showed improvement in pain reduction, functional capacity, and overall quality of life. This case study suggests that a physiotherapeutic approach with ultrasound, mulligan mobilisation, and targeted exercises can be effective in managing chronic sacroiliitis with SI joint dysfunction in reducing symptoms and improving functional outcomes.

Keywords: Sacroiliitis, Visual Analogue Scale, Roland-Morris Disability Questionnaire, Oswestry Disability Index, Mulligan Mobilisation Exercises

Introduction

Chronic sacroiliitis refers to long-term inflammation of the sacroiliac (SI) joints, which are located in the lower back where the spine connects to the pelvis. It is often associated with conditions such as inflammatory arthritis and infections like tuberculosis.[1,2] Symptoms of chronic sacroiliitis include persistent or intermittent pain in the lower back, buttocks, hips, or groin, stiffness, reduced range of motion, inflammation, and radiating pain down the leg.[3,4]

Sacroiliitis is diagnosed using medical history, clinical presentation and radio imaging studies (Figure 1) such as X-ray, CT and MRI, and serology testing to check for markers of inflammation or specific antibodies. Treatment options for chronic sacroiliitis include medication (such as NSAIDs or DMARDs), physical therapy (including manual therapy, stretching exercises, strengthening exercises, and ultrasound therapy), injection therapy, and surgery in rare cases.[5] Physiotherapy has an important role in the management of chronic sacroiliitis and SI dysfunction to alleviate pain, and improvement in mobility and strengthening of the surrounding muscles to support the SI joints.[6]

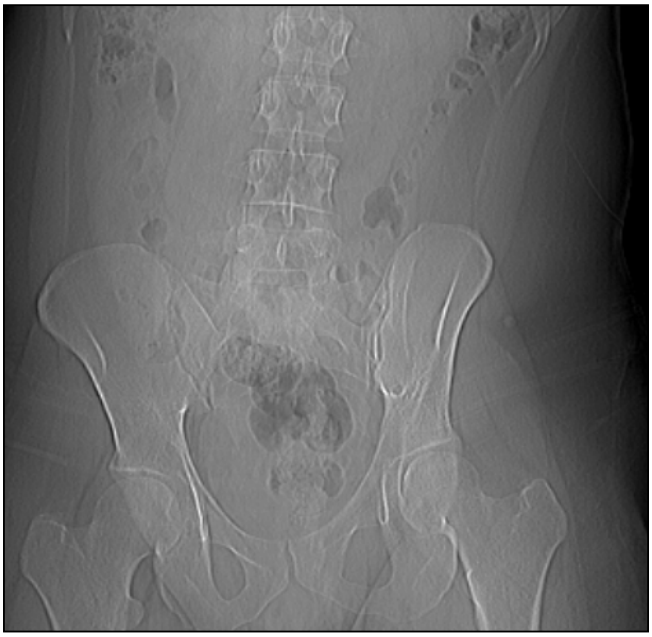

Figure 1.MRI of Lumbosacral Spine showing Right Sacroiliitis

Case Report

A 28-year-old male with a history of low back pain predominantly on the right side of the buttocks for the past 6 months took a course of interferential therapy at a private hospital facility for 4 weeks. His symptoms did not reduce, rather his pain increased and he was referred back to the orthopaedics department where he was managed with SI joint block. The subject had an initial pain relief for two weeks, after which the pain started to increase gradually and became worse. There was no improvement in pain score or functional ability. He was then referred to the physiotherapy department of the Chettinad Hospital for a physiotherapy course.

On examination, he reported dull aching pain which was primarily located in the right side SI joint region, buttocks and hips. It worsened on prolonged standing and sitting and improved with rest. He denied any recent history of trauma or injury to the lower back or hip region.

Medical history: No significant medical history, no history of autoimmune disorders or inflammatory arthritis, no previous surgeries, no family history of rheumatic diseases

On examination, the following findings were noted:

- Restricted range of motion in the lumbar spine, particularly in flexion and extension
- Tenderness and pain on palpation over the right SI joint
- Positive SI compression and distraction test, Gaenslen test. Negative straight leg raise test
- Anterior innominate present on the right side of the pelvis
- Antalgic gait

His diagnostic workup showed that the right SI joint had joint space narrowing with sclerosis and his left SI joint showed no abnormality. MRI of the SI joint showed sub-articular STIR marrow hyperintensity in the sacral and iliac ends of the right SI joint. Blood investigations were negative for rheumatoid factor and antinuclear body but elevated ESR and C-reactive protein were observed.

Based on the clinical presentation, imaging findings, and laboratory results, the subject was diagnosed with chronic right-side sacroiliitis. The diagnosis was further supported by the presence of elevated inflammatory markers (ESR and CRP) and imaging evidence of right-side sacroiliitis. On physical therapy evaluation, he was diagnosed with SI dysfunction (anterior innominate) along with chronic sacroiliitis.

The physical therapy treatment plan was modified to correct SI dysfunction by Mulligan mobilisation technique (10 repetitions, 3 sets) along with ultrasound therapy (frequency: 1 MHz, intensity: 1.2 W/cm^2, duration: 8 mins) followed by muscle stretching and strengthening programmes, for a duration of three weeks (Table 1). The subject was reassessed, and pre- and post-intervention scores were recorded using the following parameters, Visual Analogue Scale (VAS), Oswestry Disability Index (ODI), and Roland Morris Disability Questionnaire (RMDQ).

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Outcome Measures

Oswestry Disability Index

The ODI is a condition-specific assessment instrument that has stood the test of time and examination. It is valid, reliable, and responsive. Although it now offers promising signs for the evaluation of less serious problems, it has been employed mostly in chronically ill and seriously disabled populations.[7]

Roland-Morris Disability Questionnaire

The RMDQ was constructed using the Sickness Impact Profile covering all dimensions of physical and mental function.[8]

Visual Analogue Scale

VAS is used to measure the intensity or severity of a specific symptom, most commonly pain.[9] It typically consists of a straight line, either horizontal or vertical, with anchor points at each end. The anchor points represent the extremes of the symptom being measured from no pain to maximum pain.

Intervention

Therapeutic Ultrasound

In order to treat painful musculoskeletal disorders, therapeutic ultrasound, an electrophysical agent, is frequently utilised in physiotherapy.[10]

Frequency: 1 MHz

Intensity: 1.2 W/cm^2

Duration: 8 minutes

Mulligan Mobilisation

Mulligan mobilisation, or Mobilisation with Movement (MWM), is a manual therapy technique developed by Brian Mulligan.[11] The technique involves applying a sustained manual force to glide a joint with the help of a specialised belt while the subject performs movements actively to increase the range of motion and alleviate pain (Figure 2).

Ethical Approval

This study was conducted at the Department of Physiotherapy, Chettinad Hospital and Research Institute and was approved by the Institutional Ethics Committee. The procedure was explained to the subject and signed informed consent was obtained from him. The subject participated voluntarily in this study.

Results

The subject showed a marked improvement in pain reduction, functional capacity and quality of life compared with the initial assessment. The outcome measures showed a much better prognosis in the 3rd week of treatment (Table 2).

Figure 2.Anterior Innominate Correction by Mulligan Technique

Table 1.Exercise Programme for Sacroiliitis

S.no	Stretching Exercises	Repetition	Strengthening Exercises	Repetition
1.	Hip extensor	Twice a day 5 reps/20-sec hold/3weeks	Isometric hip abduction and adduction	Twice a day 10 reps/3 weeks
2.	Hip adductor		Stabilisation exercise for the spine	
3.	Piriformis		Bird dog	
4.	SI joint stretch		Superman's	
5.	Lower trunk and pelvis rotation		Pelvic bridge	

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Table 2.Outcome Score

Outcome	Baseline	2nd Week	3rd Week	% Change
VAS	8	5	2	75
ODI	37	24	16	56
RMDQ	16	10	6	62

VAS: Visual Analogue Scale

ODI: Oswestry Disability Index

RMDQ: Roland-Morris Disability Questionnaire

Discussion

The treatment of chronic sacroiliitis associated with SI joint dysfunction represents a significant challenge in the field of physiotherapy and rehabilitation. In this single case study, we explored the effectiveness of physiotherapeutic approach in managing this condition. The findings of this case study shed light on the potential benefits of physiotherapy interventions in improving pain, function, and quality of life for individuals with chronic sacroiliitis.

Chronic sacroiliitis is a painful condition which has a physical and psychological impact on the subject. The pain may be associated not only with sacroiliitis but with other underlying pelvic dysfunctions such as anterior innominate, posterior innominate, SI diastasis, or other postural dysfunctions.[12] The neurophysiologic effects of joint mobilisation may have contributed to pain relief through the release of natural pain-relieving substances with inhibition of pain signals and reflexive muscle relaxation, reducing muscle tension and improved joint lubrication and function, Enhancing proprioception and joint stability to restore normal sensory and motor control patterns.[13,14]

Mulligan mobilisation aims to reduce pain and improve joint function. Providing mobilisation in combination with specific movements may help alleviate pain associated with sacroiliitis. The technique is designed to enhance joint mobility. In the case of sacroiliitis, where the SI joint may become stiff or restricted, Mulligan mobilisation may help improve joint motion and restore normal function. By reducing pain and improving joint mobility, Mulligan mobilisation may contribute to better functional outcomes for individuals with sacroiliitis. This can include improved walking, sitting, and performing daily activities with less discomfort.[15]

Ultrasound therapy can help alleviate joint pain by increasing blood flow to the area. The increased blood circulation can promote the delivery of oxygen and nutrients to the affected joint, which can reduce pain and promote healing. Ultrasound therapy can induce muscle and soft tissue relaxation and may help reduce inflammation in and around the joint. The heat generated by ultrasound can increase blood flow, which can facilitate the removal of inflammatory substances and promote the body's natural healing response. By promoting tissue relaxation and reducing pain and inflammation, ultrasound therapy can contribute to improved joint mobility.[16]

Strengthening the muscles around the lower back and pelvis can enhance the stability of the SI joint. This can help support the joint and reduce excessive movement or misalignment, which can be a source of pain. Stronger muscles in the lower back can provide better support to the SI joint, potentially reducing pain associated with SI joint dysfunction. Strengthening exercises can improve overall function, making it easier for individuals with SI joint issues to perform daily activities with less discomfort.[17–20]

Medication and electrotherapy modalities do not relieve the symptoms unless the dysfunction and derangement are corrected or reduced. Detailed examination of the subject, in this case, showed that the subject had anterior innominate along with sacroiliitis. Mulligan manipulation technique combined with ultrasound and exercises produced significant results in reducing the subject's symptoms. At the end of the follow-up, the pain intensity had decreased by 75%. The ODI score dropped from 37 to 16 and the RMDQ score fell from 16 to 6.

Conclusion

Chronic sacroiliitis is usually treated with electrotherapy modalities and exercises, but subjects with sacroiliitis with SI dysfunction do not respond well to the conventional treatment. This case study proved to be beneficial by showing the efficacy of manual therapy combined with ultrasound and exercise as the subject showed a significant improvement in pain reduction, functional ability, and muscle strength.

Authors' Contribution:

MN and LH wrote the article based on assessment and treatment.MZF wrote the patient perspective section. CR, AT and IV helped revise the manuscript

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Conflict of Interest: None

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