Development of the Benefits of Using Manual SOP Therapy in Cases Low Back Pain at Causa Piriformis Syndrome

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Abstract

Low Back Pain at Causa Piriformis Syndrome is a musculoskeletal disorder that causes pain in the fifth lumbar and first sacral areas that radiates to the feet and legs due to an abnormal neuromuscular condition of the *piriformis muscle* or compression or irritation of the sciatic nerve running below through the muscles. muscle. Low back pain itself is something that is common in patients so patients seek medical help, whereas piriformis syndrome is a case that is difficult to diagnose. Electrodiagnostic consultants are often asked to differentiate between *piriformis syndrome* and radiculopathy. Low back pain at causa piriformis syndrome is caused by activities carried out in the wrong way and carried out repeatedly as well as a lack of education which results in pain in the back and radiating to the legs. This case study aims to find the benefits of physiotherapy intervention in the form of manual therapy such as stretching of the postural muscles, myofascial release, dynamic muscle adaptation, contract relax of the piriformis muscle, hip traction, and physiological movements in the lumbar region and the piriformis muscle. The research method used is a case study. The respondent used was a 48 year old patient who was a housewife who had retired from office work. This research was conducted 8 times for one month. Patients were evaluated using a visual analog scale (VAS). The results of using intervention in the form of manual therapy show a reduction in pain in low back pain at causa piriformis syndrome from a pressure pain scale of 8 to 3, movement pain from 8 to 2 and silent pain from 2 to 1. In conclusion, providing manual therapy intervention has benefits in Reduces pain in the lower back and piriformis syndrome muscle.

Keywords: *Low Back Pain, Piriformis Syndrome, Manual Therapy, Visual Analog Scale.*

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A. INTRODUCTION

Daily activities and lifestyle play an important role in human health. The large number of activities carried out can have a negative impact on the body excessive use. This can cause injury to the human body such as muscles, bones and nerves. Muscles that are continuously used will cause pain, one of which is pain in the lower back to the buttocks. The pain is felt at one point called a trigger point along the muscle.

Low Back Pain is defined as pain in the posterior area of the lower back. The limit of the lower back is in the fifth lumbar and first sacral segments (L5-S1), the pain felt is usually accompanied by radiation to the feet and legs, and only 15% have been diagnosed as having a specific cause (Cuenca-Martínez et al., 2018).

Meanwhile, Piriformis syndrome is a neuromuscular condition characterized by symptoms that include hip and buttock pain. Pain is often felt in the back of the leg, sometimes towards the medial side of the leg. The pain that is often felt is often associated with numbness in the lower extremities. This peripheral neuritis is thought to be the result of an abnormal piriformis muscle or compression of the sciatic nerve

which travels down through the muscle. With similar cases of lumbar disc herniation, radiculopathy, and neurogenic pain, piriformis syndrome is often difficult to diagnose (Norbury, 2012).

Chronic low back pain occurs more specifically, individuals aged between 20 to 59 years have a prevalence of chronic low back pain of 19.6%, while the prevalence in older people is 25.4%, apart from that, pain disability is also very often reported. (Rice et al., 2019).

The exact etiology of Low Back Pain can be caused by infection, degenerative conditions, neoplasms, trauma, congenital disorders, metabolic and autoimmune diseases. The most common causes of low back pain are mechanical causes such as trauma to the spine, discs, and surrounding soft tissues. (Ramdas J. 2018).

While low back pain is influenced by piriformis syndrome. Piriformis syndrome can occur due to primary or secondary factors, secondary factors occur more often than primary factors (15% of cases). Primary piriformis syndrome has an anatomical background such as a torn piriformis muscle, a split sciatic nerve, or abnormalities in the path of the sciatic nerve. Secondary piriformis syndrome occurs due to triggers including trauma, leg length differences, sacroiliac inflammation, piriformis tendon bursitis, and so on (Ranjan, 2014).

In the case of signs and symptoms of lower back pain according to Inflammatory disorders, malignancy, pregnancy, trauma, osteoporosis, nerve root compression, radiculopathy, plexopathy, degenerative disc disease, disc herniation, spinal stenosis, sacroiliac joint dysfunction, facet joint injury, and infection (Vincent, 2023).

Meanwhile, in piriformis syndrome, the signs and symptoms experienced by patients are like sciatica, and it is often difficult to differentiate the origin of radicular pain due to spinal stenosis and piriformis syndrome. Pain can radiate to the back of the thigh, but sometimes it can also occur in the lower leg at the L5 or S1 dermatome and patients can also complain of buttock pain, and usually on palpation mild to moderate tenderness is found around the sciatica.

By performing FAIR (flexion, adduction and internal rotation), health care providers may be able to reproduce the patient's symptoms (Hopayian, 2018). Manual therapy is a physiotherapy procedure that requires special skills and techniques in joint mobilization. Manual therapy is used to reduce pain, increase joint mobility, reduce swelling and increase tissue flexibility (Jamtvedt et al., 2008).

There are several therapy manuals that will be applied in treating cases of low back pain at causa piriformis syndrome, such as stretching the postural muscles, myofascial realization, dynamic muscle adaptation, contract relax the piriformis muscle, hip traction, and physiological movements in the lumbar region and the piriformis muscle.

B. METHODS

This study was designed to be used by physiotherapists with manual therapy interventions using postural muscle stretching, myofascial realization, dynamic

muscle adaptation, relaxation contraction of the piriformis muscle, hip traction, and physiological movements in the lumbar area. A 48 years old woman complained of pain in her back when sitting and stand. The patient feels disturbed and feels pain when carrying out activities. The patient, a housewife, has a habit of frequently lifting heavy objects in the wrong position for a long time and repeatedly.

Inspection and assessment of the narrow base of support and anterior center of mass prevent compensatory posterior sway of the lumbar spine. Limited movement during invitation due to protective muscles, Standing on one leg, Worse increase in lateral displacement of the pelvis on the current side compared to the right side. For neurological tests, all tests performed were negative, MMT Gluteus medius: right 4/5, left 4 minus/5 Gluteus maximus: 4/5 bilaterally. Supine hip extension for the Right: excessive lumbosacral extension accompanied by delayed gluteus maximus deployment and for the Left: hamstring dominant with excessive lumbosacral extension and hip rotation; delayed deployment of the gluteus maximus, Hip abduction Compensatory hip flexion indicating dominance of the Tensor Fascia Latae over the synergistic gluteus medius; along with increased posterior rotation of the pelvis indicating inadequate stabilization of the trunk stabilizers, Supine knee flexion Increased lumbar rotation and extension caused by stiffness and shortening of the two-joint hip flexors.

Muscle length test, One-joint hip flexors: WNL (within normal limits) Two-joint hip flexors: stiff bilaterally, both legs do not hang perpendicular to the floor (knee flexion up to 75°) Hamstrings: right 55°, left 50° with lifting straight legs, Passive joint mobility (posterior-anterior pressure) pain at L5-S1. Palpate Trp Tres in the left quadratus lumborum, left psoas major, lateral adductor longus and pectineus, and left hamstring.

This study also used a pain scale for lower back pain caused by piriformis syndrome such as the Visual Analogue Scale, which is the most widely used method for assessing pain. This linear scale visually depicts the gradation of pain levels that a patient may experience. The pain range is represented as a 10 cm long line, with or without markings at each centimeter. The marks at both ends of this line can be numbers or descriptive statements. One end indicates no pain, while the other end indicates the most severe pain. The scale can be made vertical or horizontal. The scale can be made vertical or horizontal. The VAS can also be adapted into a pain relief or pain relief scale, which is used in patients over 8 years of age and adults. The main benefit of VAS is that it is very easy and simple to use. However, for the post-operative period, VAS is not of much benefit because VAS requires visual and motor coordination as well as concentration abilities (Yudiyanta et al., 2015).

C. RESULTS AND DISCUSSION

Will most likely consist of manual mobilization of the joints or soft tissues and restoration of muscle length or strength. In this SOP, the initial treatment stage focuses on teaching the patient the abdominal scoop technique instructed by the therapist and the patient practices abdominal bending with various functional movements such as

getting in and out of bed or chair or car, rolling around in bed, bending, reaching, and also noticed a large difference in the level of pain when the patient moved his abdominal muscles and when he did not.

The abdominal brace is a very powerful tool that he uses to control and manage his symptoms. The patient is also advised to change his position frequently and avoid stretching or twisting his body for long periods when he sits down to work. For measuring pain using the Visual Analogue Scale at meetings 1 and 2 it produces pressure pain of 8 with a moving pain scale of 8 and silent pain of 2. Then at meetings 3 and 4 the pain in the lumbar region has not changed. At the 5th meeting the pain in the lumbar region has reached The patient's sacrum was on a pressure pain scale of 8, movement pain was 6 and silent pain was 1. At the 6th meeting, the pain in the lumbar had reached the sacrum. The patient was on a pressure pain scale of 8, movement pain was 6 and silent pain was 1. To measure pain, use the Visual Analogue Scale. At the 7th meeting the pain in the lumbar region had reached the sacrum. The patient was on a scale of 6 moving pain and 1 silent pain. At the 8th meeting. At the 6th meeting there was also a reduction in pain such as pressure pain 6, moving pain 5 and silent pain 1. At the meeting The 7 patients experienced a decrease in pressure pain with a scale of moving pain of 4, moving pain 3 and silent pain of 0 and at the last meeting the patient experienced a fairly good reduction in pain, such as pressure pain of 3, movement pain of 1 and silent pain of 1.

Patients are also advised to change positions frequently and avoid flexing or rotating the body for long periods of time when sitting to work. The patient is instructed to widen the base of support (BOS) and shift the center of mass of his body slightly towards his heels when standing so that his body weight is more evenly distributed on his feet. This reduces pressure on the tissues in the lumbar segments due to excessive paraspinal activity thereby reducing pain levels.

Manual therapy uses stretching of the postural muscles, myofascial realization, dynamic muscle adaptation, piriformis muscle contraction, hip traction, L5-S1 tightening and physiological movements in the lumbar region with the Initial stage Treatment and training during the initial stage also includes the following: Flexion active prone knee without hip rotation or lumbar extension (this exercise is also intended to lengthen tight two-joint hip flexors), Passive hip flexor stretch in a modified SLR test position or half-kneeling position, Slow knee extension is performed with the hip flexed to 90° in supine position to lengthen the hamstrings while increasing glide of the perineal structures, PIR technique for the two-joint hamstring and hip flexor muscles to inhibit the tone of these muscles with a spontaneous reduction in TrPs and increased recruitment and strength of the gluteus muscles. Intermediate stage The intermediate stage of rehabilitation consists of: PIR for the quadratus lumborum and adductor followed by gluteus medius facilitation, gluteus strengthening exercises (medius and maximus) with a focus on proper form, as well as providing therapy such as stretching of the postural muscles, myofascial realization, dynamic muscle adaptation, piriformis muscle contraction, hip traction, and physiological movements. Patients are advised to use an abdominal support with

elevation of both arms in the supine position so that the patient can perform ADL activities that reach above the head. Use of abdominal support along with unilateral hip flexion in the supine position to prepare the patient to perform independent movements of the lower extremities while maintaining spinal stability.

Exercises the hip joints in the sagittal and transverse planes to promote neutral spinal posture (i.e. Hip movement, not flexion and rotation of the lumbar segments). After the sixth visit, the patient's symptoms were well controlled. Patients rarely complain of lower back pain except when sitting longer than usual. He returned to walking on the treadmill and jogged slowly for 30 minutes without worsening symptoms. The next goal is to gradually return to previous activities. The final stage of rehabilitation is returning the patient to his previous level of activity. This stage consists of: SMT continues to increase exercise (challenge) using elastic resistance, free weight lifting, use of proprioceptive exercises, and plyometrics. Place the patient in a position that interferes with the back and practice correct motor patterns such as sitting to standing, sleeping facing left to right, picking up objects, squatting, bending the body. The entire patient rehabilitation process from initial evaluation to discharge, which consists of 8 sessions, is carried out within 1 month. In the early stages, rehabilitation focuses on pain management and patient education; After that, it continues with efforts to restore muscle length and muscle recruitment balance and finally designing a specific manual therapy exercise program to return the patient to the expected activity goals. Emphasis is placed on appropriate movement patterns to ensure ideal motor programming within the CNS is enhanced. In short, a comprehensive rehabilitation program should focus on improving motor patterns and functional tasks, rather than focusing on specific muscles.

D. CONCLUSION

This research was conducted based on SOPs from physiotherapy clinical practice guidelines which show that the use of manual therapy such as using postural muscle stretching, myofascial realization, dynamic muscle adaptation, relaxation contraction of the piriformis muscle, hip traction, and physiological movements in the lumbar spine are effective in reducing pain and weakness. in the lumbar region and reduces pain in piriformis syndrome.

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