ORIGINAL ARTICLE

Efficacy of Active Conservative Treatment for Patients With Acute Sciatica

ZULFIQAR ALI QURESHI[1], JUGDESH KUMAR[2], SAMINA REHMAN[3], NADEEM TARIQ[4]
[1]Department of Orthopaedics, University of Lahore/Social Security Teaching Hospital Lahore, [2]Ghulam Muhammad Mahar Medical College Sukkur, [3]Department of Forensic Medicine, Bolan Medical College Quetta, [4]Department of Dental Surgery, Lahore General Hospital, Lahore
For correspondence: Dr. Zulfiqar Ali Qureshi, Assistant Professor, Department of Orthopaedics, University of Lahore/Social Security Teaching Hospital, Lahore email:dr_zulfikar_ali@yahoo.com

ABSTRACT

Background: The clinical sign of sciatica has been recognized since ancient times. Currently believed to arise from a disorder of the nerve root, the sign is known as lumbosacral radicular, nerve root compromise, nerve root pain, and nerve root entrapment or irritation. Patients with a lumbosacral radicular syndrome are mostly treated conservatively in 6–12 weeks (acute and subacute phase). Sciatica affects many patients who are commonly treated in primary health care settings, but a small proportion of patients are referred to secondary care and may eventually undergo surgery. One of the possible causes of sciatica is a spinal disc herniation pressing on one of the sciatic nerve roots.

Objective: To investigate the efficacy of conservative treatment for the management of patients with sciatica.

Patients and Methods: This study was carried out from 1st September 2008 to 30th September, 2009 in the Department of Orthopedics, Social Security Teaching Hospital, Lahore. The selection criteria consisted of hundred patients aged 20–60 years, radicular pain of dermatomal distribution to the knee or below in one or both legs and acute sciatica. Patients were excluded if they had previous back surgery, spinal tumors, pregnancy, or an inability to follow the rehabilitation protocol due to concomitant disease such as depression or heart failure. Sciatica is mainly diagnosed by history taking and physical examination. Patients were followed for one year.

Results: There were 85 (85%) males and 15 (15%) females with ratio 5.6:1. The baseline treatment adviced to all patients included NSAIDs for short periods, skeletal muscle relaxant, anti-depressant, tapering course of prednisolone: 60 mg for 3 days, 40 mg for 3 days and 20 mg for 3 days, bed rest for 5-7 days and later activity and physical therapy. At 2nd to 3rd weeks epidural steroids were also additionally injected in 25 patients. At 12 weeks follow-up (1st follow-up) 60% patients including 25 patients with additional epidural steroids had no low back pain or radiating pain, were able to return to their routine life with special attention to back care and posture and SLR became negative. 25% patients had expressed improvement but with recurrence of symptoms, although the pain intensity decreased. 15% patients had intractable pain. MRI for lumbosacral spine was done. Ten patients had prolapsed intervertebral disc (PID) L5-S1, 3 patients had PID L4-L5, L5-S1 and 2 patients had PID L4-L5.

Conclusion: To treat acute sciatica, active conservative treatment was effective, speed patients recovery, rates of return to work and activities of daily living. It was also useful for patients who had symptoms and clinical findings that would normally qualify them for surgery.

Key words: Sciatica, Radicular pain, Conservative treatment

INTRODUCTION

Sciatica is a subgroup of low back pain, which involves nerve root compression, and this condition has a lifetime prevalence of 4–5%.[1,2] The annual prevalence of sciatica is estimated to be 15% of the population.[3] While there are a range of definitions of sciatica, the key clinical features that can help clinicians to distinguish it from non-specific low back pain include unilateral leg pain that is worse than the low back pain, pain radiating below the knee, positive results on a straight leg raise test, and weakness or reflex changes, or both, in amyotomal distribution.[4,5] In about 90% of cases sciatica is caused by a herniated disc with nerve root compression, but lumbar stenoses and (less often) tumours are possible causes.[1,2] Sciatica is a presence of pain and tenderness at some point of the sciatic nerve. The pain is present

in the leg and often radiates below the knee and into the foot and toes. As such, it is important to point out that sciatica is a symptom and not a specific diagnosis of a pathology as many different factors could be the root cause of the present condition. It is just as important for us to understand that any back problem can lead to a referred pain and must be distinguished from the pain caused specifically by an inflammation or an impingement of the sciatic nerve. The term sciatica is misused by many in the health care field as well as by the general public.[6]

For a long time the main cause of sciatica was believed to be purely mechanical - a nerve-root compression by disc herniation. However there were some contradiction to this hypothesis as well.[7,8] While the researchers do not entirely reject the role of mechanical compression as a potential cause of sciatica, in recent years inflammation of neural tissues in lumbar disc herniation has been reported.[9] First, nucleus pulposus, the central soft component of the intervertebral disc and the bulging component in the disc herniation, has inflammatory properties.[10] Studies reported displacement of nucleus pulposus on the nerve roots to cause pain, electrical impulse abnormalities and cellular changes.[11] Second, local auto-immune reaction is also believed to be a potential cause of the inflammatory process.[12] Lastly, the mechanical compression itself can lead to an inflammation when light compression force is applied to a nerve root over a prolonged period of time.[13]

Pseudosciatica or non-discogenic sciatica, which causes symptoms similar to spinal nerve root compression, is most often referred pain from damage to facet joints in the lower back and is felt as pain in the lower back and posterior upper legs. Pseudosciatic pain can also be caused by compression of peripheral sections of the nerve, usually from soft tissue tension in the piriformis or related muscles. In 15% of the population, the sciatic nerve runs through the piriformis muscle rather than beneath it. When the muscle shortens or spasms due to trauma or overuse, it can compress or strangle the sciatic nerve beneath the muscle. Conditions of this type are generally referred to as entrapment neuropathies; in the particular case of sciatica and the piriformis muscle, this condition is known as piriformis syndrome. It has colloquially been referred to as "wallet sciatica" since a wallet carried in a rear hip pocket will compress the muscles of the buttocks and sciatic nerve when the bearer sits down. Piriformis syndrome may be a cause of sciatica when the nerve root is normal.[4,5] Analgesic and adjuvant pain drugs are often prescribed for patients with sciatica. Patients with a clinical diagnosis of sciatica are about five times more likely to take drugs than those with low back pain only.[14] Drugs commonly prescribed for the management of sciatica include non-steroidal anti-inflammatory drugs (NSAIDs), skeletal muscle relaxants, opioid analgesics, benzodiazepines, systemic corticosteroids, antidepressants, and anticonvulsants.[15,16] Gabapentin is an anticonvulsant medication approved recently as an medication for treating certain types of neuropathic pain. The use of gabapentin for chronic pain was first described by Mellicks in the treatment of reflex sympathetic dystrophy in 1995.[17]

PATIENTS AND METHODS

This study assessing the efficacy of conservative management of sciatica was carried out from 1st September 2008 to 30th September, 2010 in the Department of Orthopaedics, Social Security Teaching Hospital Lahore. One hundred consecutive patients with radicular pain below the knee were included. All patients were assessed to ensure that they met all 3 study eligibility criteria: a diagnosis of acute sciatica, age between 20 and 60 years, and recruitment into the study within 1 week after onset of symptoms. The principal investigator confirmed the diagnosis based on finding unilateral leg pain extending below the knee and a positive straight-leg-raising sign (defined as pain radiating from the buttock to below the knee with elevation of the leg between 0° and 60°). Patients were not included in the study if they were pregnant or had a history of diabetes, renal failure, upper gastrointestinal bleeding, or major psychiatric disease. Patients were also excluded if they had: Cauda Equina syndrome, previous back surgery, spinal tumors or an inability to follow the rehabilitation protocol due to concomitant disease such as depression or heart failure. Various drugs, absolute bed rest for 5-7 days for faster recovery followed by activity as tolerated, epidural steroids and physical therapy were the different available modalities which were employed as a part of conservative management in our study. Patients also received a tapering course of prednisone: 60 mg for 3 days, 40 mg for 3 days, and 20 mg for 3 days. Throughout the study, patients were questioned about whether

they were still taking NSAIDs or narcotic medication and about the presence and magnitude of leg and back pain.

During the initial visit and all subsequent visits, specific attention was given to 8 measurement parameters: ipsilateral straight-leg-raising sign; contralateral straight-leg-raising sign; knee and ankle stretch reflexes; foot sensation; strength of quadriceps, foot dorsiflexors, and foot plantarflexors; and ability to perform 5 heel lifts. Also noted during each visit were the number of hours the patient was employed or, if the patient was not working, the estimated percentage of daily living activities which the patient had been able to accomplish in the interval since the previous visit. Note was made of whether the patient had received an epidural injection of steroid medication or a surgical intervention since the previous visit. Patients were encouraged to begin non–weight-bearing aerobic activity such as swimming and bicycle riding as soon as their pain had subsided to a reasonable degree. Most patients were also offered referral to a physical therapist. Imaging studies were not done for patients who were younger than 50 years of age and who had rapid improvement of symptoms. Plain radiograph films and magnetic resonance imaging (MRI) scans of the lumbosacral spine were adviced for patients who had intractable pain or chances of progressive neurologic symptoms.

RESULTS

In our study, out of 100 patients, 85 (85%) were males and 15 (15%) were females with ratio 5.6:1. Conservative treatment of sciatica during first 6-12 weeks is suggested and combines non-pharmacological and pharmacological modalities. Our treatment options were sciatica included drugs to relieve pain and inflammation (including oral cortisone), muscle relaxant, antidepressant, anti-convulsant, epidural steroids, bed rest for short period followed by activity as tolerated with special emphasis to back care and posture and physical therapy. Patients were examined at baseline, 12 weeks later at post-treatment follow-up and at one year follow-up and MRI scan for patients who had intractable pain for chances of progressive neurologic symptoms. The baseline treatment adviced by us included NSAIDs for short periods (7-10 days with repetition if necessary), skeletal muscle relaxant, anti-depressant, tapering course of prednisolone: 60 mg for 3 days, 40 mg for 3 days and 20 mg for 3 days, bed rest for 5-7 days and later activity and physical therapy. At 2nd to 3rd weeks epidural steroids were injected additionally in 25 patients.

At 12 weeks follow-up, 60% patients including 25 patients with additional epidural steroids had no low back pain or radiating pain, were able to return to their routine life with special attention to back care and posture, and SLR became negative. 25% patients expressed improvement but with recurrence of symptoms, although the pain intensity decreased. They were not able to return to routine life. They were given a second injection of epidural steroids and were advised gabapentin 600 mg/day, and to stay active as per their tolerance. 15% patients had intractable pain. MRI for lumbosacral spine was done. Ten patients had prolapsed intervertebral disc (PID) L5-S1, 3 patients had PID L4-L5, L5-S1 and 2 patients had PID L4-L5. They were advised surgery. One outcome was similar for patients assigned to conservative treatment and those assigned to early surgery. All patients (85 cases) who received conservative treatment were asympatomatic.

DISCUSSION

Low back pain can be disabling, with significant direct and indirect costs to individuals as well as society. The inability to walk with security and stability are the principal handicaps felt by individuals suffering from acute sciatica. The emphasis is placed on early return to routine life without significant financial loss to the family.[18,19] In this series 40 patients had sciatic scoliosis in addition to positive ipsilateral straight-leg-raising sign. Fifteen patients had positive contralateral straight-leg-raising sign and 35 patients had positive ipsilateral straight-leg-raising sign without sciatic scoliosis. Conservative treatment was initiated in all cases soon after their recruitment into the study within one week after onset of symptoms. The average time period to return to routine life was about 6-12 weeks in 60% of patients[20], about 14-20 weeks in 25% of patients. 15% patients had to undergo surgery due to intractable pains. All these patients were finally followed-up after one year. One year outcomes were similar for patients assigned to conservative management and those assigned early surgery.

There is definitively a place for conservative treatment for sciatica. All different modalities were ineffective when employed alone. However they were effective only when used in combination. Research had failed to show a significant

difference in outcomes between advice to stay active and recommendations of bed rest. Similarly, physical therapy has not been found better than bed rest. Epidural corticosteroid injections can be recommended as a additional therapy, especially in the acute phase of conservative management of sciatica.[21,22] If effective, conservative treatment saves patients from high costs, fears of surgery and hospitalization. Early administration of oral steroids in patients with acute sciatica, lead to slightly more rapid rates of improvement in pain, mental well-being, and disability scores. Oral steroids are inexpensive and relatively safe medications that, if effective in reducing the pain and disability associated with sciatica, could improve the quality of patients' lives, and result in significant cost savings to society at large.[23]

Gabapentin is effective in relieving neuropathic pain and chronic pain. More recently, many studies have suggested that gabapentin may have a role in the management of various other pain and motor syndromes.[24-26] Patients treated with gabapentin were able to achieve improvements in pain, motor function, spinal flexion, straight leg raising test, and sensory functions. When combined with epidural steroid, both pain scores and paresthesia improved in patients with radiculopathy receiving gabapentin. In our study, none of the patients reported any residual neurological deficit at one year follow-up. The idea of conservative treatment in management of sciatica should be honored. Patient's awareness of back education and posture care is of utmost importance for the conservative management to meet success.

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