SCIATICA SYNDROME

***S**ciatica* is a term usually used to describe a classic syndrome that may include pain in the low back, pain radiating down the leg, numbness (paresthesia or anesthesia) within the dermatomes innervated by the lumbar or sacral nerve roots, or weakness of musculature innervated by the affected sciatic nerve. True *sciatica* results from a mechanical pressure on the sciatic nerve or its spinal nerve roots.

Compression of the sciatic nerve or its nerve roots usually produces a pain of variable onset and character. The pain may be variously described as gnawing, shooting, lancinating or dull. It usually begins in the buttocks and extends down the posterior aspect of the thigh and calf to the ankle, and foot and toes. The pain accompanying sciatica is generally constant. Pain and involuntary neuromuscular resistance accompany any movement of the lower extremity or thorax that stretches the nerve. A good example and a test for sciatica is a straight leg raise, on the involved side. The patient's range of motion will be limited by pain and mechanical restriction.

If true *sciatica* is present, there may be weakness of dorsiflexion of the big toe, hypoesthesia to pin prick and light touch within the L5 or S1 dermatome distributions and loss of ankle quick stretch reflexes. These symptoms have been traditionally associated with a rupture of the intervertebral disc between the L5 and S1 vertebrae (reportedly responsible for nearly 90% of all true sciatica cases).

True *sciatica* may also be produced by mechanical pressure exerted upon any segment of the sciatic nerve or elements of its innervating nerve root plexus. Sources of such pressure include hypertrophy of the ligamentum flavum, spondylolisthesis, calcium deposit, and a distended anterior lower abdomen (pregnancy or *beer belly*). Focal swelling from infection or inflammation, fibroids, scar tissue, or retroperitoneal tumors may also produce sufficient pressure. Pressure on the sciatic nerve may also arise from pressure exerted on it by adjacent musculature. Pressure may also result from fibrositic lesions (adhesions) within adjacent musculature or fascia causing the iliopsoas, gluteal, piriformis, or tensor fascia latae muscles, or iliotibial band, to traction the sciatic nerve.

Sciatica may be caused by direct pressure on the nerve produced by the mechanics of poor posture, prolonged bicycle riding, or sitting on the edge of a chair with one buttock bearing more weight than the other. In addition, it may be caused by improperly placed intramuscular injections.

A DSR survey should be made of the lumbosacral area to establish the presence of inflammation.

Treatment

Sciatica, originating from nerve root pressure in the lumbosacral area, generally has several contributory factors. They may include orthopedic changes (bulging disk, osteoarthritic spurs, or stenosis), inflammation generated soft tissue swelling, and adhesion formations. Each contributory factor must be treated appropriately for complete resolution.

Application:

- If the condition is **acute**, icepack the inflamed area.

- If the condition is **chronic,** place a negative electrode over the inflamed zone and a positive electrode over a more proximal back site. Preset an electrical stimulator to deliver a medium frequency current, with a 10 second on and 10 second off duty cycle, and a current level sufficient to produce a near tetanic contraction in the stimulated muscles. Stimulate for 15 minutes.

- In either case (acute or chronic), manipulate the tissues in and around the inflamed zone to eliminate any adhesions that are present.

- Preset an ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.8 W/cm^2. Ultrasound the inflamed zone, utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for 6 minutes. This procedure is designed to decrease prostaglandin production and reduce any osteoarthritic spurring that may be present.

- Apply swing chair lumbar traction, enhanced by electrical stimulation and vibration, to reduce intervertebral pressure.

- Instruct the patient in how to perform the *William's Flexion Exercises* for use at home between treatment sessions (refer to William's Flexion Exercises: Low Back Muscle Lengthening).

Some immediate reduction of pain may be expected if the treatment is successful. Complete resolution of the syndrome may take many sessions, but usually no more than six.

Post Treatment Suggestions:

To reduce symptomology resulting from pressure on elements of the sciatic nerve plexus in the lumbosacral area at home, the patient should lie supine with the knees supported by pillows to reduce the lordotic curve, or lie prone over pillows supporting the hips and waist sufficiently high to flatten the lordotic curve (not all patients find this position comfortable). Alternatively, the patient may lie on the uninvolved side with the knees kept parallel. A pillow placed between the knees has been found to increase the comfort of the patient as well as helping to insure the parallel knee position. Placing one knee in front of the other is extremely dangerous since it causes lumbosacral rotation, potentially increasing the shearing force on the compressed nerve. Pillows placed in front and behind the knees of the patient lying in this side position may prove valuable by helping retain the parallel knee posture while sleeping.

Trigger Points

The following trigger point formations may, singly or in combination, imitate or contribute to the pain associated with *sciatica*: Multifidus (S4),

Longissimus thoracis (L1), Longissimus thoracis (T10-T11), Multifidus (L2-L3), Multifidus (S1-S2), Iliocostalis lumborum (L1), Caudal (lower) rectus abdominis, Gluteus medius, Gluteus minimus, Adductor longus, Biceps femoris, Vastus medialis, Gastrocnemius, Anterior tibialis, Long toe extensors, Soleus, Peroneus longus, Short toe extensors, and Abductor hallucis.