Dynamic Chiropractic

Management of Radial Nerve Cubital Entrapment Syndrome -- A Conservative Approach

R. Vincent Davis, DC, PT, DNBPM

In the region of the elbow, the radial nerve branches several times, and is subject to entrapment. As it descends distally along the humerus it passes in front of the lateral condyle of the humerus between the brachialis and the brachioradialis muscles. As it progresses along its course below the elbow joint, the radial nerve passes below the origin of the short radial extensor muscle, which has its origin from a fibrous band stretching from the epicondyle to the deep fascia of the volar aspect of the forearm. At this point the radial nerve divides and sends the superficial nerve outside the fibrous band/deep fascia.

The deep branch continues under the fibrous band of the muscle after which it gives off a small recurrent branch which passes to the lateral condyle where it proceeds distally to enter the supinator muscle by way of a small slit. Finally, the deep branch becomes the posterior interosseous nerve. This nerve supplies the musculature by which the wrist and fingers are dorsiflexed.

Although the superficial radial nerve may be exposed to direct trauma as a result of its superficial anatomical location, the usual trauma to which it is exposed results from an indirect source. This indirect source is the violent contraction of the forearm extensor muscle groups. The mechanism involves forceful and/or repeated motion of supination or dorsiflexion against resistance. Use of a tennis racket, a screwdriver, a heavy hammer, or any similar activity are examples which would explain the etiological mechanism. This explanation would be very appropriate in the case of a person unaccustomed to performing these activities. The forceful contraction of the extensor group which enhances the tightening of the fibrous band at the muscular origin and/or forceful contraction of the supinator which narrows the slit through which the nerve penetrates are largely responsible for the resulting radial nerve entrapment phenomenon.

This clinicopathological process may simulate lateral epicondylitis clinically because the resulting tension may refer pain to that area via the recurrent branch of the radial nerve.

The pain pattern may be reproduced by having the patient resist forceful wrist and finger supination and extension or resisting middle finger extension with the elbow extended. Typically, the patient is unable to make a fist because the wrist drop results in tension of the extensors of the fingers and as a result opposes their flexion. Appropriately, the patient should undergo electrodiagnostic studies of nerve conduction. This author also recommends the performance of somatosensory evoked potentials (SSEP) studies. In this authors opinion, if no nerve conduction impairment develops within one week after presentation, nerve interference is considered physiological and a conservative regimen should be planned.

Conservative care includes avoidance of any painful motion with a cock-up splint to immobilize the wrist in a neutral position. Also, local moist infrared therapy, daily p.r.n., and pulsed cortisone (0.5%)/lidocaine ointment (2.5%) phonophoresis at 0.5 W/cm2 for 5 minutes, b.i.d. Apply

interferential current with careful attention to the location of electrode placement using a beat frequency of 100 Hz or higher to enhance parasympathetic activity, b.i.d., or p.r.n, for five minutes. This regimen should provide for an excellent probability of recovery. However, to monitor the clinical progress, it is prudent to order serial strength-duration (SD) curve studies. This will offer evidence of recovery long in advance of actual clinical response. Surgical exploration of the nerve is necessary if the muscle response to electrical stimulation has not demonstrated improvement within six weeks. Also, the Tinel sign could reveal the exact location of the origin of the pain impulses.

Radial nerve repair usually has a very good prognosis.

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R. Vincent Davis, DC, BSPT, DNBPME
Independence, Missouri

JUNE 1993