Radial nerve compression at the elbow

Mennen U, MBChB, FRCS (Glasg), FRCS (Edin), FCS (SA) Orth., MMed (Orth), MD (Ort) Pret
Head: Department Hand- and Microsurgery, Medical University of Southern Africa, RSA

(SA Fam Pract 2004;46(6): 40)

Dear Colleague,

Re: Your patient with pain on the lateral side of the elbow

Thank you for your referral of Mr. P F, a 43 year old right hand dominant manager who complains of pain on the lateral side of his right elbow. This pain has a vague distribution and cannot easily be localized. The pain is aggravated by heavy exercises such as work-out at a gym. At night the pain tends to spread proximally up the arm. When driving long distances his arm feels heavy. He has difficulty in holding heavy objects in his hands such as a box. Apart from the pain the arm feels weak and on occasions he has even dropped objects because of the sudden weakness of the arm. His pain seems to have come on spontaneously over the past six months. He cannot remember any traumatic incident.

On **examination** the joints of the right upper limb have full passive and active motion. The neurovascular examination of the right arm and hand are within normal limits. Local palpation of the elbow does not reveal any abnormal swelling. Lateral and medial epicondyles are not tender. The radial head is not sensitive. However palpating the radial nerve along its course as it emerges from the posterior compartment in the upper arm between the bracio-radialis and extensor carpi-radialis longus muscles on the lateral side of the cubital fossa, becomes very tender about five centimeter distal to the epicondyle as it divides into the posterior interosseus nerve which pierces the supinator muscle and the superficial branch which lies underneath brachio radialis. This pain is increased with resisted supination of the forearm. The contralateral radial nerve is usually tender but not painful. There is a clear difference between the symptoms of the two radial nerves.

Special investigations done were an x-ray of both elbows which did not reveal any abnormalities and the electroconduction test was inconclusive.

The initial clinical **diagnosis** was radial nerve compression as it passes between the extensor muscles (BR and ECRL) and then pierces the supinator muscle. In order to confirm the diagnosis I injected about 3 ml. of local anaesthetic around the radial nerve. The patient was immediately relieved of the typical symptoms.

The **management** is based on a surgical release of the compressed radial nerve. This is achieved by a five-centimeter long incision along the radial nerve. The nerve is approached by carefully separating and the brachio-radialis and extensor carpi-radialis longus muscles. One often finds blood vessels crossing the nerve which should be cauterized. The superficial branch of the radial nerve should be followed distally as it follows a route underneath brachio-radialis. The deep branch i.e. posterior interosseous nerve pierces the supinator muscle. A clear fibrous arch is usually present which should be incised. Ensure that the nerve is completely free as it passes through the supinator muscle. A pressure bandage is applied for a week after wound closure. During this time the patient is encouraged to gently use the elbow and forearm. After the week the patient should be sent to a physiotherapist specifically for radial nerve stretching exercises. The nerve should also be gently mobilized and ultra-sound used to prevent adhesions from forming.

Discussion

Radial nerve compression is often missed or mis-diagnosed as a "tennis elbow". Other differential diagnosis may include pathology of the radial head and osteo-arthritic changes on the edges of the elbow joint which may impinge the synovium. By a careful clinical examination one should not have difficulty in distinguishing between these various conditions around the lateral side of the elbow. Radial nerve compression is not seen as a complication with any specific activity. Electro-conduction is seldom helpful since the nerve has a deep course.

With sincere regards,

Ulrich Mennen

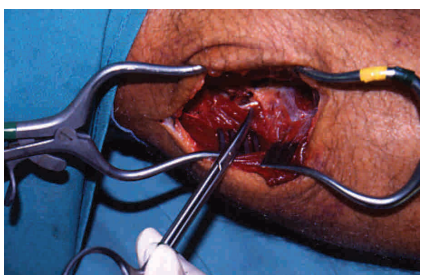
Legend

Radial Nerve Compression at the Elbow

Figure 1

The dotted line represents the course of the N. radialis between the ECRL and BR muscles, anterior to the radial head and lateral epicondyle. The (x) indicate where the nerve is very tender on pressure i.e. where it pierces the supinator muscle.

Figure 2



The radial nerve is clearly demonstrated as it pierces the supinator muscle under a very tight fibrous arch.