Entrapment of the Sensory Branch of the Radial Nerve (Wartenberg's Syndrome): An Unusual Cause

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TOSUN, N., TUNCAY, I. and AKPINAR, F. *Entrapment of the Sensory Branch of the Radial Nerve (Wartenberg's Syndrome): An Unusual Cause*. Tohoku J. Exp. Med., 2001, **193** (3), 251-254 — Isolated neuropathy of the cutaneous branch of the radial nerve is a rarely recognized pathology. It was described in 1932 by Wartenberg, who suggested the name *cheiralgia paraesthetica*. The syndrome is described as known the entrapment of the superficial branch of the radial nerve. Many different etiologic factors for chronic nerve entrapment have been described, however our case has an unusual cause. A 52 year old man had pain and paresthesia in the area over the lateral aspect of the wrist, thumb and first web six months after Colles' fracture. The patient underwent bony spike resection after five months with ineffective conservative treatment. He has satisfied after this operation. The case was presented because of disappearing his preoperative complaints after the operation with respect to Wartenberg's syndrome constituted a rare cause of bone spike which has not been mentioned in the literature.

——— Wartenberg's syndrome; entrapment

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Entrapment of the superficial branch of the radial nerve (SBRN) has been seen as exceptionally rare condition, which was described by Stopford (1922) firstly. Following papers were reported by Matzdorff (1926) and Wartenberg (1932). The condition is sometimes indicated as Wartenberg's syndrome but Wartenberg was so impressed by the similarity to the isolated involvement of the lateral superficial femoral

cutaneous nerve, meralgia paraesthetica, that he suggested the name *cheiralgia paraesthetica*. Other descriptive terms for the syndrome are hand cuff neuropathy or neuropraxia, wristlet watch neuritis (Lanzetta and Foucher 1993).

Wartenberg's syndrome is usually confused with de Quervain's disease, also this syndrome has been seen associated with de Quervain's disease at the same time. Even though, cer-

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vical spondylosis must be excluded in the differential diagnosis (Braidwood 1975).

Many different etiologic factors for chronic nerve entrapment of the radial sensory nerve have been found (trauma, diabetes, repeated exposure to severe cold). Our case has an unusual cause, thus we presented it.

CASE REPORT

A 52-year-old white man was admitted to our orthopedic department. Six months ago the patient had a Colles' fracture (Frykman type II) after traffic accident. His complaints were pain and numbness of paraesthesia in an area over the lateral aspect of the wrist, thumb and first web, where pressure reproduced the symptoms. The patient was in clinical group type I according to the site of Tinel's sign by Lanzetta, and Dellon's provocation test for entrapment of superficial branch of the radial nerve was positive. In electrodiagnostic test, decreased sensory conduction velocity was present. There was enlargement union site of fracture in the wrist radiographs (Fig. 1). Although, previously the patient has been treated conservatively (wrist immobilization, non-steroid antiinflammatory drugs) for five months his symptoms has not been resolved.

Intraoperatively, SBRN has been compressed/irritated by a dorso-radially bone spike of site of the distal radius fracture. This bone spike was removed surgically (Figs. 2 and 3). Exercises were as early as started after this operation. In early postoperative period, the patient has not problem and his preoperative complaints completely dissolved/recovered six weeks later after surgery.

DISCUSSION

SBRN emerges from beneath the brachioradialis at the junction of the middle and distal thirds of the forearm, traveling from deep to superficial through the fascia that binds the

brachioradialis tendon to the extensor carpi radialis longus tendon. These tendons can compress the SBRN during pronation. This compression is the usual cause of the nerve compression originally described as a mononeuritis by Wartenberg (1932), which he, a neurologist, believed to be an inflammation of the SBRN.

Many different causes for SBRN have been described: trauma, diabetes, repeated exposure to severe cold, over exertion of the hand, a too tightly worn wristwatch, de Quervain's disease, handcuffs, lipoma, operations, tight fascial bands, compression by the tendons brachioradialis and extensor carpi radialis longus alone or in combination, anatomic variations especially brachioradialis (Turkoff et al. 1995) and extensor carpi radialis longus (Linell 1922).

Entrapment of the radial nerve branches due to Colles fractures may be observed third most frequently injured nerves. When the effect of the apparatus used in the treatment is added, the frequency of damage or irritation to the radial nerve branches is increased, making them the second most frequently injured nerves. Stretch injuries and direct contusions are possible but entrapment by bony spike is not more common (Linscheid and Dobyns 1995).

Wartenberg's syndrome may be associated with de Quervain's disease. This association rate that was reported in 50% by Lanzetta and Foucher 1993. Differential diagnosis of both diseases is made clinically. Tinel's sign, paraesthesia and Dellon provocation test are positive in Wartenberg's syndrome, also Finkelstein's test is positive in de Quervain's disease. However careful sensory testing, the absence of swelling and tenderness at the radial styloid, a positive nerve percussion test over the course of the nerve and electrodiagnostic studies can distinguish Wartenberg's syndrome from de Quervain's stenosing tendovaginitis (Szabo 1999).

The patient's complaints were pain and numbness of paraesthesia in the area over the

Fig. 1. Radiological appearance of the wrist.

Fig. 2. Resection of the bony spike.

Fig. 3. The nerve after decompression.

lateral aspect of the wrist, thumb and first web. Tinel's sign and Dellon's provocation test were positive. In electrodiagnostic test, decreased sensory conduction velocity was present. There was enlargement union site of fracture in the wrist radiographs. The case was presented because of disappearing his preoperative complaints after the operation with respect to Wartenberg's syndrome constituted a rare cause of bone spike which has not been mentioned in the literature.

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