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Medical Memoranda

Anterior Interosseous Nerve Palsy

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Spontaneous paralysis of the muscles innervated by the anterior interosseous nerve is an extremely rare condition. We could find only 11 documented cases in the literature. It was first described by Parsonage and Turner (1948). It is interesting to note that in nearly all the cases reported the treatment was conservative, with variable results. Fearn and Goodfellow (1965) were the first to operate on such a case, and the result was stated to be good.

The anterior interosseous nerve arises from the median nerve as the latter passes between the two heads of the pronator teres and accompanies the anterior interosseous artery to reach the anterior surface of the interosseous membrane in the forearm. Here it lies in the interval between the flexor pollicis longus and the flexor digitorum profundus. Variation in the anatomy has been seen at operation but has not been mentioned in standard textbooks.

In some of the reported cases it was found that the anterior interosseous nerves were compressed by fibrous bands which passed between the deep head and the superficial head of the pronator teres. One author reported a fibrous band beneath the flexor digitorum sublimis.

Recently a case of spontaneous palsy of the anterior interosseous nerve was seen and treated by us at the East Glamorgan General Hospital.

CASE HISTORY

A 40-year-old woman was seen at the casualty department of the East Glamorgan Hospital. She stated that she worked as a metal-ring cutter, and that while pulling a lever she experienced pain in the right shoulder. She was treated conservatively with analgesics for one week, and for a further week with splinting and physiotherapy. There was no improvement in her condition, and she was therefore referred to the orthopaedic department. Here it was noted that she could not flex the interphalangeal joint of the right thumb nor the terminal interphalangeal joint of the right index finger. There was no wasting of the right thenar eminence. The reflexes were normal and there was no sensory changes. No point of deep tenderness was found anywhere on the arm or forearm.

Electromyography showed paralysis of the flexor pollicis longus and partial paralysis of the flexor digitorum profundus. This confirmed the presence of an isolated lesion of the anterior interosseous nerve. Three weeks later there was no improvement, and exploration of the nerve was undertaken.

At operation a musculofibrous band running across the anterior interosseous nerve from the deep head to the superficial head of the pronator teres muscle was found. Further dissection showed that this band bifurcated at the level of the elbow and that one head was attached to the capsule of the elbow joint. This band was completely removed and the wound was closed in layers.

Almost full return of power of flexion to the terminal phalanges of the thumb and index finger occurred within 10 days.

COMMENT

Our knowledge of isolated anterior interosseous nerve palsy is limited. The nerve is situated deep in the forearm and is therefore rarely injured, but there have been occasional reports of its being damaged as a result of fractures of the radius and ulna (Warren, 1963).

Mechanical compression by fibrous bands has been reported by Fearn and Goodfellow (1965), but according to Vichare (1968) it is rare.

It seems to us that because there exists an uncertainty about the aetiology, and because the results of conservative treatment are unpredictable, early surgical exploration after a preliminary course of conservative treatment is justifiable.

In the case reported there was no recovery after four weeks of conservative treatment. Paralysis of the muscles supplied by the anterior interosseous nerve was clearly shown by electromyography. At operation it was evident that the nerve was compressed by a fibromuscular band—this is the first time a fibromuscular band has been reported. Division of this band was followed by the return of movement of the paralysed muscle within 12 hours, and complete recovery occurred within two weeks.

We wish to thank Sister M. Howe and the nursing staffs of Ward 1 for looking after the patients.

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