Neuropathy of the lateral cutaneous nerve of the forearm

Manohar ARUMUGAM,1 Shariful HASAN (Malaysia),2 Gowreesan ARIRATNAM,1
1 Department of Orthopaedic Surgery and 2 Department of Medicine, Faculty of Medicine and Health Science, Universiti Putra Malaysia, Malaysia

ABSTRACT

Entrapment of the lateral cutaneous nerve of the forearm is a relatively uncommon condition. It is one of the differential diagnosis of pain at the elbow and paraesthesia of the distal forearm specifically the anterolateral area of the forearm. This case study describes neuropathy involving the lateral cutaneous of the forearm, which occurred in a 50-year-old lady with no history of previous upper limb trauma.

Keywords: Neuropathy, lateral cutaneous nerve of the forearm, neurpraxia

INTRODUCTION

The lateral cutaneous nerve of the forearm (LCNF) is a sensory nerve. It is the terminal branch of the musculocutaneous nerve and is also known as the lateral antebrachial cutaneous nerve. It provides sensory innervation to the anterolateral aspect of the forearm. It traverses the anterior compartment of the arm anterolaterally between the biceps and brachialis. It exits the arm two to five centimetre proximal to the elbow flexion crease lateral to the biceps tendon by piercing the brachial fascia. It is at this point that the LCNF gets entrapped.1, 2 The nerve then runs volar to the cephalic vein, as it travels down the forearm to the wrist along its radial border. At the wrist, the nerve is located volar to the radial artery and then runs distally towards the ball of the thumb.

Most cases of neuropathy involving the LCNF are reported to be non-traumatic in origin.3–6 They are attributed to irritation of the nerve from repetitive vigorous activity where the nerve is fixed by the fascia and compressed by the biceps tendon at its lateral edge.7 Iatrogenic injury of this nerve has also been reported.8 Venepuncture of the cephalic vein may cause injury to this nerve because of the close proximity of this nerve with cephalic vein.9, 10 Since this is nerve is purely sensory and there is no motor deficit it may be under-recognised.9

CASE REPORT

A 50-year-old Indian housewife presented with a 6-month history of discomfort involving the left forearm. There was no precipitating trauma or any invasive procedure carried out that coincided or preceded with the symptoms onset. She did not participate in any sporting activity. However, she practices...
She does not have diabetes mellitus or any rheumatologic conditions also had or prior history of these symptoms. The discomforts had gradually worsened over time. She was only using a ketoprofen patch but this did not ease her symptom.

On examination, there was sensory deficit along the anterolateral border of the forearm (Figures 1a and b). Otherwise, she had no tenderness, no weakness and had full range of motion. The rest of the neurological and joint examinations were normal, and there was no evidence of cervical spine problem. A nerve conduction study (NCS) showed decreased sensory nerve action potential (SNAP) of the LCNF (left 1.2 µV, right 3.3 µV) (Figure 2). Needle electromyography (EMG) was normal. Based on these findings, a diagnosis of sensory neuropathy of the left LCNF was made. She was referred for physiotherapy and showed a remarkable improvement within six weeks. She is currently pain free and showed complete resolution of her symptoms.

DISCUSSION

Entrapment of the LCNF at the elbow was first described by Narasanagi in 1972, and later by Hale as the ‘handbag paraesthesia’. It occurs because of compression of the LCNF when women hang their handbag around the elbow. Although relatively uncommon, the possibility of entrapment of the lateral cutaneous nerve of the forearm must be considered as one of the differential diagnosis of pain over the lateral aspect of the elbow. Patients, who present with pain around the elbow may manifest with paraesthesia along the flexor aspect of the distal forearm.

Other causes of discomfort around the elbow include lateral epicondylitis, cubital tunnel syndrome, and radial tunnel syndrome. In lateral epicondylitis there will be tenderness over the lateral epicondyle and is usually aggravated by activities such as pouring water from a kettle. Cubital tunnel syndrome is the compression of the ulnar nerve at the elbow and usually there will be numbness of the lateral one and a half digits that are supplied by the ulnar nerve. Radial tunnel syndrome is not that common and is caused by compression of the posterior interosseous nerve. There is however no muscle weakness or numbness. It can be distinguished from lateral epicondylitis, as the point of maximum tenderness is about two to four centimetre distal to the lateral epicondyle. In lateral epicondylitis, the tenderness is over the lateral...
epicondyle. On clinical examination, there may be tenderness over this area, Tinel’s sign maybe positive just lateral to the biceps tendon, dysaesthesia of the forearm in the anterolateral aspect and numbness of the lateral aspect of the forearm. Symptoms are usually worse with pronation against resistance with the elbow in full extension. In this position, the lateral border of the biceps tendon may compress the nerve where it is tethered at its exit point through the brachial fascia.  

Apart from lateral epicondylitis, cubital tunnel syndrome, and radial tunnel syndrome, other conditions that needs to be considered include cervical radiculopathy, brachial plexus injury, and pronator teres syndromes. Our was examined for these various conditions and was found to be normal. Although she is 50 years of age, she did not have any evidence of cervical spondylosis. The presence of biceps weakness should alert the examiner to the possibility of musculocutaneous nerve injury, or cervical radiculopathy, as the lateral antebrachial cutaneous nerve is purely a sensory nerve. Only one nerve was involved in our patient. If multiple nerves are involved then the possibility of polyneuropathy or viral brachial neuritis has to be considered. Polyneuropathy involves multiple nerves, whereas in viral brachial neuritis different levels of the myotome and dermatome are involved. Diagnosis depends on detailed history, thorough physical examination, and good knowledge of anatomical landmarks.

If in doubt, injections of local anaesthetic in the suspected area can discriminate between lateral antebrachial cutaneous nerve entrapment, lateral epicondylitis and radial tunnel syndrome. It is diagnostic for radial tunnel syndrome if patient develops temporary posterior interosseous nerve palsy and gets relieve from the pain. In addition, electrodiagnostic studies (NCS and EMG) can be helpful in confirming the diagnosis. The usual finding of NCS is prolonged latency or decreased amplitude of the sensory NCS of the LCNF in the affected side.

Treatment include resting and general restriction, non-steroidal anti-inflammatory drugs (NSAIDs), splinting, ultrasound stimulation techniques, steroid injections locally.
and transcutaneous electrical nerve stimulation (TENS). Surgical exploration and decompression is usually recommended if conservative treatment fail after 12 weeks of trial. A simple transverse incision centred over the point of maximal tenderness along the anterolateral aspect of the lower arm is usually made. The LCFN is then identified and released from the deep fascia. A triangular wedge of aponeurosis overlying the nerve is then resected to decompress the nerve.

Patients who present with paresthesia usually require surgical intervention as paresthesia represents a more progressive stage of nerve entrapment. Surgical treatment in responder to conservative treatment is simple yet effective in improving patients’ symptoms. Most will recover within a month after surgery with almost complete resolution of symptoms.

In conclusion, entrapment neuropathy of the LCNF should be considered in the differential diagnosis of recurrent or chronic elbow pain. Electrodiagnostic evaluation can be very useful in establishing and confirming diagnosis. If conservative treatment is not effective in improving symptoms, surgical decompression is recommended and it is associated with excellent results.

REFERENCES
8: Prahlow ND, Buschbacher RM. An antidromic study of the medial antebrachial cutaneous nerve, with a comparison of the differences between medial and lateral antebrachial cutaneous nerve latencies. J Long-Term Effects Med Implants 2006;16:369–76.