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ABSTRACT

We present a case of Guyon’s canal syndrome caused by a synovial cyst within the left wrist of a 48-year-old female patient. The patient presented pain and paresthesia in the region of the ulnar nerve, with loss of muscle strength and left-hand deformity. Electroneuromyography showed a compression of the ulnar nerve at the wrist level. Surgical decompression of the nerve at Guyon’s canal with resection of the cyst was performed. After the surgery, the patient presented an improvement in the pain and paresthesia, as well as an increase in muscle trophism and correction of the deformity.

Keywords – Ulnar Nerve Compression Syndromes; Synovial Cyst; Nerve Compression; Ulnar Nerve

INTRODUCTION

The ulnar nerve can be compressed in some parts of its path, including the cubital canal, arcade of Struthers and Guyon’s canal1). Compression at Guyon’s canal is considered rare in the literature. There are various causes of compression at Guyon’s canal, such as trauma, tumors, thrombosis of the ulnar artery or cysts. The increased pressure inside the canal causes a decrease in the conduction velocity of nerve stimuli, thereby generating pain, paresthesia and muscle weakness.

Synovial cysts may occur in any joint, but they are most frequent in the wrist, on its dorsal face, and they can function as a compressive factor in osteofibrous tunnels.

In this study, we present the description of a case of Guyon’s canal syndrome caused by a synovial cyst in the left wrist of a 48-year-old female patient.

CASE REPORT

The patient was a 48-year-old right-handed non-white woman who worked in her home, with a report of pain in the hypothenar region of the left hand that had started insidiously and had evolved for four months. She also presented paresthesia on the path of the ulnar nerve and a strength deficit in her left hand. The pain was constant, of medium intensity, with worsening upon mobilization of the left thumb. She said that she had not suffered any local trauma of any type, or previous lesions to the wrist.
Upon physical examination (Figure 1), she presented hypotrophy of the intrinsic musculature of the hand and hypothenar eminence, and cubital ulnar claw on the fourth and fifth fingers. She showed difficulty in moving her hand, especially the fourth and fifth fingers, with incapacity to extend these fingers. There were no other evident abnormalities. Upon palpation, she presented diminished sensitivity along the little finger and the ulnar face of the ring finger. The sensitivity of the dorsum of the hand was preserved. The radial and ulnar pulses were palpable, with good tissue perfusion in the hand, and the Allen test was negative. In the neurological examination, she presented pain on finger percussion (Tinel) along the path of the ulnar nerve, which started at the wrist and went towards the fourth and fifth fingers.

The radiographic examination did not show any anatomical abnormalities, and electroneuromyography showed motor, axonal and distal (wrist region, in Guyon’s canal) neuropathy of the left ulnar nerve.

The patient underwent surgical exploration of Guyon’s canal by means of a 6 cm zigzag incision in the volar-ulnar region of the left wrist and hand, under an anesthetic block of the brachial plexus, with the use of a pneumatic tourniquet. The exploration was deepened carefully in layers, and it was observed that the compression was caused by a synovial cyst of around 5 mm x 12 mm, between the hook of the hamate and the pisiform (Figures 2 and 3). The cyst was resected, along with the neurolysis in the canal, and the skin was sutured using nylon thread after reviewing the hemostasis. The patient was thus diagnosed as presenting type I compression (motor and sensory deficit).

The patient evolved with pain relief and improved sensitivity, as well as progressive improvement of the hypotrophy of the musculature and increased muscle strength. She is currently using an orthosis to correct the cubital claw (Figure 4) and is undergoing physiotherapeutic rehabilitation.
After 14 months of postoperative follow-up, the patient only presents difficulty in abducting the fifth finger of the left hand. She has completely recovered this movement in the other fingers (Figure 5).

The orthosis for correction of the cubital claw, which is currently accepted as the best type of conservative treatment for this deformity, is being used full-time, with removal only for physiotherapy and for personal hygiene.

DISCUSSION

The ulnar tunnel described by the French urologist Guyon in 1861 is an oblique semi-rigid canal with a bone floor and fibrous roof. Its limits are the pisiform proximally, the hook of the hamate distally and medially, and the volar carpal ligament laterally, together with the tendon insertion of the ulnar flexor of the carpus anteriorly and the pisohamate ligament and tendon of the short palmar muscle posteriorly.

The ulnar nerve originates in the nerve roots of C8 and T1 and it is the thickest branch of the medial fascicle of the brachial plexus. Around 6 to 8 cm proximally to the wrist, it sends out a dorsal cutaneous branch to the hand. On its path, it crosses the retinaculum of the flexors and Guyon’s canal, and this is a site of possible compression. The nerve is accompanied by the ulnar artery when it penetrates Guyon’s canal and, in this region, it divides into superficial and deep branches. The superficial branch is sensory and innervates the little finger and the ulnar edge of the ring finger, while the deep branch is purely motor and innervates the abductor, opponens and short flexor muscles of the little finger. In the proximal segment of the palmar region, this branch innervates the third and fourth lumbrical muscles and also all of the interosseous muscles. The terminal part innervates the adductor of the thumb and the deep head of the short flexor of the thumb.

Several factors can be correlated as the causes of compression in Guyon’s canal. These promote increased pressure inside the structures of the canal, thus causing delays in conducting stimuli. They are divided into three types: compression with sensory and motor deficit (type I); compression of the deep branch alone, with motor functional changes alone (type II); and compression of the surface branch alone, with sensory deficit without motor impairment (type III).

Synovial cysts are tumor bodies of unknown etiology that are most commonly located on the dorsal face of the palm and level of the compression. The manifestations can go from pain and paresthesia to hypotrophy and significant loss of muscle strength, with significant deformities of the hand that are often irreversible. One of these, claw hand, can occur as a consequence of nerve compressions. The wrist is fixed in palm flexion, the metacarpophalangeal joints in hyperextension and the interphalangeal joints in flexion.

The diagnosis is based on taking a detailed history, making a detailed clinical examination and using appropriate complementary examinations. Electroneuromyography is the neurological examination of choice for locating the compression. Ultrasound and magnetic resonance imaging also assist in locating the cyst. It is emphasized that an early diagnosis for the compressive syndrome is important for enabling a better postoperative prognosis.

The treatment is usually surgical, with decompression of the nerve inside the canal by means of a volar access and careful exploration.

The differential diagnosis should be done in relation to bone, tendon, ligament and vascular lesions.

In the case presented here, the patient presented improvement of her pain and paresthesia, improvement of the muscle trophism and correction of the ulnar claw. The latter deformity should be treated early on with the use of orthoses, combined with passive movement of the limb, and the orthosis should be used until complete recovery has been achieved, or until the expectations for recovery are abandoned.

This is a rare event in the literature, and early surgical treatment leads to a better esthetic and functional result for the patient.
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