Case report

Carpal tunnel syndrome caused by Palmaris Profundus sharing common sheath with median nerve

Abstract:

Carpal tunnel syndrome is the most common entrapment neuropathy in adults, usually caused by thickening of the flexor retinaculum.

Occasionally, compression of the median nerve at the wrist may be caused by the presence of an intracanalar tumor or anatomic variations.

We report in this manuscript, the case of a carpal tunnel syndrome secondary to the presence of a palmaris profundus tendon included in a common sheath with the median nerve.

Introduction:

Carpal tunnel syndrome is the most common entrapment neuropathy in adults, usually caused by thickening of the flexor retinaculum, but it can also be secondary to various affections such as ganglion cysts, lipoma, synovial hypertrophy, bone fracture, vascular malformations or accessory muscles. Anatomic variations involving carpal tunnel and muscles in the forearm are well described by clinical and cadaveric studies [1, 2]. Knowledge of the normal anatomy and anatomic variations would certainly improve the outcome of carpal tunnel release.

We describe in this article, an unusual case of the palmaris profundus found enclosed in a common fascial sheath with the median nerve, denoting an intimate relationship between the two structures.

Presentation of the case:

A 48-year-old right-handed housewife, mother of 2 children, was referred to our consultation with a 3 year history of paresthesia in the territory of the median nerve of the right hand, nocturnal then diurnal as well as decrease of the grip strength. These symptoms were persistent despite symptomatic treatment (analgesic and anti-inflammatory drugs) prescribed by her family doctor.

Clinical examination revealed a median nerve with a grade 3 muscle strength on the thetheBMRC BMRC scale (British Medical Research Council) with no thenar atrophy and a grade 2 in the sensory scale. Tinel's sign was positive on percussion over the median nerve at the wrist with Phalen's test equally as positive.

Nerve conduction tests showed prolonged median motor and sensory latencies of distal origins, concluding to the diagnosis of a carpal tunnel syndrome.

The patient was operated under loco-regional anesthesia with a mini-incision approach.

Upon surgery, release of the flexor retinaculum showed tendinous tissue that closely followed the nerve since before entrance of the carpal tunnel adhering intimately to it and seeming to have a common sheath with the nerve inside the tunnel, thus compressing it (fig 1).

We performed a dissection of the nerve and the anomalous tendon (fig 2). The distal portion of the tendon was inserted into the palmar aponeurosis. We elected not to continue proximal dissection of the tendon in the forearm although we believe that it originated at a considerable depth. Noted also was the absence of a palmaris longus tendon. The median nerve had an inflammatory aspect and was decreased in diameter, while the flexor tendon showed proliferative synovitis.

Postoperatively, pain and paresthesia disappeared and a sensory recovery graded at 4 was noted.

Fig 1 : median nerve and palmaris profundus in the common sheath (CS). Flexor retinaculum (FR) is released.

Fig 2 : individualization of palmaris profundus (PP) and median nerve (MN)

DISCUSSION

Symptomatic compression on the median nerve occurs frequently and, most commonly, in the carpal tunnel. Anatomic variations in carpal tunnel are well documented in literature. However, there have been a few reports of median nerve compression caused directly by adherence of the tendon of palmaris profundus to the nerve. Some authors consider that it merely represents an anatomical variant of palmaris longus [1]. This muscle is of interest because of its variable anatomy and because it inconsistency (absent in 17% of the general population) [3].

Palmaris profundus was first described in 1908 by Frohse and Frankel [4]. Its frequency is about 0.18 % based on a study by Reimann et al. (1944) who found the muscle once in 530 limbs [5]. It

represents 17.8% of muscles involved with carpal tunnel syndrome [2]. Palmaris profundus has been found with a proximally located muscle belly and also with a reversed, distally located belly [6].This rare muscle is generally described as arising from the lateral edge of the radius (near the radial tuberosity), in its middle third, lateral to flexor digitorum superficialis and deep to pronator teres. Its tendon passes beneath the flexor retinaculum on the radial side of the median nerve, and after passing the carpal canal it broadens in the palm to insert into the deep surface of the palmar aponeurosis.

The similarity therefore of this muscle, found in our patient, to variable forms of palmaris longus is remarkable but they differed in one very important aspect from palmaris longus. The muscle is of special interest because it was found enclosed in a common fascial sheath with the median nerve. This unusual muscle in spite of it's great resemblance to palmaris longus, may be better named "musculus comitans nervi mediani" [7], to denote its very important relationship to the median nerve, that of being its intimate traveling companion through the forearm and into the hand by way of the carpal canal.

Conclusion:

Palmaris profundus muscle is a rare entity which could cause median nerve entrapment in carpal tunnel, either by its tendon or its belly. Standard surgical release of flexor retinaculum is the gold standard technique to relieve symptoms.

Ethical approval:

Written consent of the patinet has been collected and preserved by authors.

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