Supernumerary first dorsal interosseous muscle of the hand

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CASE REPORT

During a routine anatomy module, as part of an educational course, the authors noticed unusual muscle variation of the hand in an upper limb specimen. Details regarding age, gender, race, and cause of death were not available for this specimen. An additional supernumerary first dorsal interosseous (FDI) muscle was observed, which originated from the second metacarpal bone, coursed slightly obliquely and radially, and inserted to the proximal first metacarpal bone. This supernumerary muscle was well defined and completely separate from the other two heads of the main FDI muscle (Figure 1).

DISCUSSION

The human hand has a complex anatomical structure and includes multiple intrinsic muscles which play a very important role in its function. These muscles of the hand are essential for normal positioning and movement of the fingers. The intrinsic muscles originate distal to the wrist. They are traditionally divided into five groups: thenar, hypothenar, palmar interosseous, dorsal interosseous, and lumbrical muscles. The human hand has four dorsal interosseous muscles. Particularly, the FDI muscle is of marked functional importance to the hand. It is a bipinnate muscle and originates from the medial side of the proximal end of the first metacarpal bone and lateral side of the second metacarpal bone and inserts distally to the radial base of the proximal phalanx of the index finger, the palmar plate of the metacarpophalangeal joint, and the dorsal aponeurosis. Typically, it has two heads namely superficial (radial) and deep (ulnar) head. The function of the FDI muscle is to abduct the index finger at the metacarpophalangeal joint, flex proximal phalanx at the metacarpophalangeal joint, adduct the thumb at the first carpometacarpal joint, and act as a stabilizer during various types of apposition of the thumb and index finger [1].

Anatomical variations in the morphology of the dorsal interosseous muscles have been occasionally reported since the 18th century [4–6]. They are usually presented as variations in the number of heads or locations of insertion. A few cases of supernumerary muscles have been reported as well [5, 6]. However, all of the previously reported cases of supernumerary dorsal interosseous muscles involved the second, third, and fourth dorsal interosseous muscles. To the best of our knowledge, the presence of a supernumerary FDI muscle has not been previously documented and here we present one such case with a very well defined supernumerary FDI muscle completely separate from the main FDI muscle.
Typically, variations of intrinsic muscles of the hand are asymptomatic. However, they may have implications during movement of the hand, may affect functional capacity of the hand, or may possibly contribute to increased intracompartmental pressures [5, 7]. In addition, they have to be considered when dealing with dislocated fractures of the hand or when muscle transposition flaps are planned [3, 5]. In the case presented above, because of its anatomical position, the supernumerary FDI muscle most likely contributed to the adduction action of the thumb which possibly increased the adduction strength of the thumb as well as the grip strength of the hand.

CONCLUSION

Knowledge about muscular variations of the hand is important and should always be taken into account when assessing hand function and during conservative and surgical treatment of hand conditions.

REFERENCES


Keywords: First dorsal interosseous muscle, Hand, Supernumerary