

abductor pollicis brevis, and adductor pollicis. Generally speaking, the former three are supplied by the recurrent branch of the median nerve while adductor pollicis is supplied by the ulnar nerve. However, it is necessary to qualify this statement. Any of the thenar muscles may receive median, ulnar or dual innervation^[1,3-6]. The nerve supply of flexor pollicis brevis muscle is subject to more variation than that of any other muscle in the body^[4].

Variations in the course and branches of the recurrent branch of the median nerve were reported^[5-7]. Because of its recurrent course, the branch from the median nerve to the thenar muscles is vulnerable to lesions that affect these muscles^[6]. Median to ulnar communication constitute sources of error in evaluation of nerve conduction velocity & electromyographical (EMG) study^[7].

This study aims to report the source of innervation of the thenar muscles through dissection and EMG study of each muscle separately and correlate that to prognostic values in nerve diseases and injuries.

Subjects and Methods

The electromyographical study was performed on 38 apparently healthy volunteers aged between (30y-60y) from both sexes. In two volunteers the muscles on both sides were tested rendering the total number of the hands examined in this study 42. Direct observation of the innervations of the short muscles of the thumb was performed on 15 adult embalmed cadaveric hands of both sexes. In order to restore the softness and flexibility of cadaveric specimen preserved in formalin, the method of Tschernetzky^[8] was used.

Dissection steps were performed according to Grant's dissector^[9] in order to reveal the muscles and follow the branches of the median and ulnar nerves in the palm.

To reaffirm the source of motor innervation of the short muscles of the thumb and explore variations of innervations an EMG was contemplated. This was performed using DANTEC counterpoint 4-channel electromyography.

The test procedure was explained in brief for each subject in order to alleviate any fear, anxiety or apprehension that may be present in the subject. During the procedure the subjects were lying in a supine position on an examination couch. The room temperature was maintained between (25-28°C) during the test procedures. The compound muscle action potential (CMAP) and EMG interference pattern were studied by sampling the four thenar muscles. In addition to stimulation of the median and ulnar nerves while the recording done from each muscle separately.

The stimulation was done using a bipolar stimulating electrode (DANTEC 13L36), which was placed such that the cathode is closer to the recording electrode^[10]. The cathode was placed 2-3 cm proximal to the distal crease on the palmar surface, between the flexor carpi radialis and the palmaris longus tendons for stimulation of the median nerve^[11] and just over the flexor carpi ulnaris tendon for stimulation of the ulnar nerve^[12].

Recording was done by using concentric needle electrodes (DANTEC 13L50). The subject was grounded by special electrode (DANTEC 13S93) with a 15 mm dimension width, usually located between the stimulation & recording electrodes. Muscles were located according to their contraction in action or resisted action^[14].

Results

The muscular (recurrent) branch of the median nerve was a thick short nerve that arose from the median nerve at different levels. In (86.6%) of the dissections, it was the first branch of the median nerve in the palm. It may arise as a terminal branch at the same level as the digital branches. Usually it gives branches to the flexor pollicis brevis either crossing it superficially or passing through the muscle itself. In (6.6%) of the cases, the muscular branch appeared in the carpal tunnel and pierced the flexor retinaculum. Yet in another