

and prolonged terminal sensory and motor latencies. With more severe CTS cases, electrodiagnostic study usually shows some secondary axonal loss reflected in reduced amplitude and area of the compound muscle action potential (CMAP) in response to the stimulation at any point along the nerve ⁽³⁾.

Phalen's maneuver and Tinel's sign are the most useful clinical signs for diagnosis of CTS. Tinel's sign elicited by tapping over the median nerve at wrist leading to tingling sensation in the distribution of the median nerve over the hand.

Phalen's maneuver was done by holding the wrist passively flexed for 30 seconds to 2 minutes, it was considered positive when leads to tingling sensation in the distribution of the median nerve over the hand ⁽⁴⁾.

The accuracy of the diagnosis of CTS is important because the diagnosis often leads to surgical release of the carpal ligament in patients whose symptoms are refractory to non-operative therapy. If the symptoms are not due to CTS, then the patient is unlikely to benefit from surgery ⁽²⁾.

We aim to find a correlation between the degree of severity of the CTS by nerve conduction study of median nerve and the presence of Tinel's sign and Phalen's maneuver and eventually if we can assess severity only by assessment of provocative tests.

Methods

A cross-sectional study enrolled 133 patients (102 females and 31 males) referred to Al-Yarmouk Teaching Hospital and the Neurosciences Hospital between Jan 2010 and Jan 2011 with hand complaints compatible with CTS and approved by electrophysiology as a CTS. Their ages ranged between (19-87) years. Seventy-five of the patients had left sided complaints and 58 had right sided complaints, we studied only the affected side. The patient verbal consent to be involved in the study was taken. Owing to the study is clinical one; it doesn't need an ethical approval.

The criterion for inclusion were clinically and electrophysiological proven CTS patients. The

criteria for exclusion were clinical or electrophysiological evidence of generalized peripheral neuropathy, evidences of cervical radiculopathies and any diseases leading to peripheral polyneuropathies such as diabetes mellitus, renal disease and rheumatologic diseases.

Clinical assessment was first done for each patient with special emphasis on Tinel's sign; which considered positive when tapping over the median nerve at the wrist leads to tingling sensation in the distribution of the median nerve over the hand. Phalen's maneuver was done by holding the wrist passively flexed for 1 minute, it was considered positive when leads to tingling sensation in the distribution of the median nerve over the hand.

Immediately thereafter, an electrophysiological study was done to prove the diagnosis of CTS. Nerve conduction studies were performed using standard techniques of supramaximal percutaneous stimulation with a constant current stimulator and surface electrode recording, maintaining skin temperature 32°C.

Sensory responses were obtained antidromically, stimulating at the wrist and recording from the index finger (median nerve) and little finger (ulnar nerve), with ring electrodes at a distance of 14 cm. Motor responses were obtained with stimulation at the wrist using belly-tendon recordings from the thenar muscles (median nerve) and hypothenar muscles (ulnar nerve) at a distance of 7 cm.

Sensory conduction velocity was the distal conduction velocity, determined by dividing the wrist-to-electrode distance (14 cm) by the distal onset latency of the sensory nerve action potential. For this study, the following median nerve measures were used:

- (1) baseline-to peak amplitude of the sensory nerve action potential (Amp-S);
- (2) distal onset latency of the sensory nerve action potential (DL-S);
- (3) conduction velocity of the sensory nerve fibers (CV-S);
- (4) baseline-to-peak amplitude of the compound muscle action potential (Amp-M); and