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Needle electromyography in carpal tunnel syndrome. Is it valuable or predictable?

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Background: Needle electromyography (EMG) examination is not crucial in establishing a diagnosis of carpal tunnel syndrome (CTS). However, the presence of axonal loss in needle EMG helps clinicians determine a treatment strategy such as surgery.

Aim of the work: Is to investigate if needle EMG in CTS patients is essentially needed or could be predicted by other nerve conduction study (NCS) parameters.

Methods and Material: This study included 100 patients with clinical and NCS proven CTS, as well as 50, age and sex matched, control subjects. All subjects were evaluated using electrodiagnostic techniques, including median distal latency (DL), compound muscle action potential (CMAP), forearm motor nerve conduction velocity (FMCV), median peak latency (PL), sensory nerve action potentials (SNAP), and sensory nerve conduction velocity (SNCV). All CTS patients underwent EMG examination of the abductor pollicis brevis (APB) muscle, and the presence or absence of spontaneous EMG activity was recorded.

Results: Comparison of the NCS parameters between CTS patients with and without spontaneous EMG activity revealed that the main determinant parameters for spontaneous activity were CMAPs, SNAPs and FMCVs. However, logistic regression analysis showed that CMAP was the most powerful predictor of the presence of spontaneous activity (p=0.000, Odds ratio=12.154).

Conclusions: It can be concluded that median nerve CMAP amplitudes are the most powerful predictor of the occurrence of spontaneous EMG activity. However EMG examination is still valuable in some CTS patients and NCS cannot completely replace needle EMG examination in these patients.

Key-words: Carpal tunnel syndrome, needle electromyography, spontaneous activity.

Key Messages: Despite that CMAP amplitudes are the most powerful predictor of the presence of spontaneous EMG activity in CTS patients, EMG examination is still needed in some CTS patients and NCS cannot completely replace EMG examination in these patients.

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