

Comparison between Sonography and Electrodiagnostic Testing in the Diagnosis of Carpal Tunnel Syndrome

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Abstract

Background: Progress in high-contrast ultrasound technology in recent years brought more attention to its role in the diagnosis of carpal tunnel syndrome (CTS). The aim of this study is to evaluate the diagnostic value of sonography in the diagnosis of CTS and its relationship with disease severity.

Methods: In this prospective study, 100 patients who had unilateral upper extremity involvement were studied. All patients were initially undergone electro diagnostic test and the test was assumed as the gold standard. Afterwards the cross-sectional area and anteroposterior diameter of the median nerve in the carpal tunnel inlet and outlet and the thickness of the flexor retinaculum were measured by ultrasound in all patients. Relationships between ultrasound and electro diagnostic findings were evaluated using SPSS software ver. 19th.

Results: Patients included 84 women and 16 men in the age range 19 to 72 years (mean age 44.43 ± 12.05 years). Among the criteria evaluated, the proximal and distal cross sectional area of the nerve showed significant correlation with disease diagnosis ($P= 0.018$ and $P= 0.022$ respectively). In addition, significant relationship was found between mentioned two criteria and the severity of the disease ($P<0.05$ both). The best cut-off point at the proximal cross sectional area was 9.45 mm^2 in which the sensitivity was 78.9%, specificity was 82.8%, positive predictive value was 91.8% and negative predictive value was 61.5%.

Conclusion: The present study indicated that evaluating the cross sectional area of the median nerve using ultrasound at the carpal tunnel inlet is useful in diagnosing CTS. According to its high sensitivity, specificity and positive predictive value, it is not only useful in diagnosing suspected patients but also can be useful in screening the population at risk.

Key Words: Carpal Tunnel Syndrome, ultrasonography, electrodiagnosis

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