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## Evaluation of median nerve by shear wave elastography and diffusion tensor imaging in carpal tunnel syndrome

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### Abstract

**Purpose:** The aim of the current study is to investigate the diagnostic role of shear-wave elastography and diffusion tensor imaging in patients with carpal tunnel syndrome.

**Material and Methods:** The study included a total of 77 wrists; 18 normal, 35 wrists with mild, 9 wrists with moderate and 15 wrists with severe carpal tunnel syndrome. Elastography of the median nerve was performed by defining the boundaries of a segment of the nerve at sagittal plane at the level of proximal carpal row. Additionally, the cross-sectional area of the median nerve was evaluated. Fractional anisotropy and apparent diffusion coefficient measurements were carried out by placing region-of-interest at three levels: at pisiform bone (carpal tunnel inlet), mid carpal tunnel, and hook of hamate (carpal tunnel outlet).

**Results:** Patients with carpal tunnel syndrome had higher elasticity values of median nerve (53.0 kPa; IQR 40.8-77.0 kPa) compared to control subjects. (36.8 kPa; IQR 31.0-39.9 kPa) Patients with moderate-severe carpal tunnel syndrome had higher elasticity values (82 kPa; IQR 64.0-95.5 kPa) compared to patients with mild carpal tunnel syndrome. (44 kPa; IQR 32.5-59.5 kPa)

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