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The association between the swelling of the median nerve and carpal tunnel syndrome in patients with short-term hemodialysis.

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Objectives: A carpal tunnel syndrome (CTS) is a frequent complication of long-term hemodialysis. 20% to 50% of the patients dialyzed for 10 years or longer are reported to have CTS. However, risk factors for CTS in short-term hemodialysis have been less known. In this study, we investigated whether the swelling of median nerve could be a risk factor for CTS in patients with relatively short-term hemodialysis (mean duration of hemodialysis: 4.03 years).

Methods: The study included 43 patients (23 male & 20 female) on maintenance hemodialysis and 97 healthy controls. We diagnosed the CTS by nerve conduction study (NCS) and clinical symptom. The cross sectional area (CSA) of median nerve was measured at the wrist (CSA–W) and forearm (CSA-F) by ultrasonography. The wrist to forearm ratio (WFR; CSA-W/CSA-F) was calculated for each arm. The degree of swelling of median nerve was assessed by the WFR.

Results: The mean duration of hemodialysis (n=43) was 4.02 ± 3.30 years. The WFRs in hemodialysis patients were higher than those in healthy controls. We classified into patients with CTS (n=19) and without CTS (n=24). The WFRs in patients with CTS were higher than those in patients without CTS. We performed ROC analysis to investigate the best cut-off value of WFR for predicting the CTS in all study subjects (n=43). The AUC of the WFR was 0.825 (95% CI: 0.678-0.923). The best cut-off value of the WFR was > 1.25 with a sensitivity of 84.2% and specificity of 70.8%. In multivariate analysis, the patients with WFR > 1.25 were 6.3 times more likely to have the CTS compared with patients WFR (HR: 6.30, 95% CI: 1.45-27.5, P = 0.014)

Conclusions: This study demonstrated that the swelling of median nerve was the independent risk factor for the CTS in patients with relatively short-term hemodialysis.