Early Detection of Carpal Tunnel Syndrome by Electroneurophysiologic Studies in Chronic Hemodialysis Patients

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Dear Sir,

Carpal tunnel syndrome (CTS) is the most common musculoskeletal complication in chronic hemodialysis patients [1]. There is an increasing awareness of this complication after the demonstration of dialysis-associated amyloidosis and several studies have emphasized a positive correlation between the incidence of CTS and the duration of hemodialysis [2]. The incidence reaches 50% after 14 years of dialysis but has been reported as 0% before 5 years [3]. Electroneurophysiologic studies are regarded as the best method in the diagnosis of CTS and provide an additional advantage or differentiating uremic neuropathy and cervical lesions from CTS [4]. When screened with electroneurophysiologic studies we have observed an unexpectedly high incidence of CTS in our hemodialysis population, even before 5 years. We suggest that electroneurophysiologic studies are the method of choice in early detection of CTS, enabling timely surgical intervention in regular hemodialysis patients.

Electromyographic (EMG) recordings of 30 regular hemodialysis patients in our hemodialysis unit were performed with an eight-channeled Toennies Product of Erich Jaeger GmbH & Co. KG electromyograph and was compared to the recordings of 30 age- and sex-matched healthy controls. Recordings of action potential of motor nerves were obtained from superficial bipolar electrodes 1 cm in diameter and sensory action potentials were recorded by finger electrodes placed on standard points. Delay in distal latencies of more than 2 standard deviations (SD) of the

control group was the criteria used in the EMG diagnosis of CTS. Only 1 hemodialysis patient had diabetes and 16 patients had laboratory evidence of secondary hyperparathyroidism. They were dialyzed 15 h/week and by utilizing acetate dialysate and cuprophane membranes. Eleven (37%) were women and 19 (63%) were men. Mean age was 41.3 years (range 21-66). Average duration of regular dialysis was 54 months (range 11-144). Average median nerve distal motor and sensory latencies were measured as 3.82 and 3.68 ms

respectively. CTS was diagnosed in 12 (40%) of these 30 patients and a delay in distal latency less than 2 SD of the control group was observed in 2 (6.6% >) patients. CTS was unilateral in 9 (30%) patients and bilateral in 3 (10%). There was no correlation of the vascular access site and CTS. Five patients underwent surgical decompression procedures and amyloid deposition was not detected by crystal violet and Congo red stains in any of these patients.

This high incidence of CTS, reaching 40% in a dialysis population which has an average dialysis duration of 54 months, emphasizes the importance of electrophysiologic studies in the detection of CTS. This approach not only enables differential diagnosis of peripheral neuropathy and cervical root compressions from CTS, but also provides quantitative data for timely surgical intervention before irreversible changes, and in the follow-up of the patients after decompression of the median nerve.

References

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