Carpal Tunnel Syndrome Complicating Cimino-Brescia Fistula: An Electrophysiologic Evaluation

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Dear Sir,

The occurrence of symptoms of carpal tunnel syndrome (CTS) is being reported with increased frequency in patients with forearm arteriovenous fistulae for maintenance hemodialysis [1–4]. However, carefully conducted electrophysiologic evaluation of CTS attributed to angioaccess is scanty. The aim of the present study was to investigate, electrophysiologically, evidence for CTS in a group of patients undergoing hemodialysis with the antebrachial Cimino-Brescia fistula.

Patients and Methods

Fifteen patients with chronic renal failure (8 males and 7 females), age range 20–66 years (mean 33.2 years), submitted to maintenance hemodialysis for a period of 1–8 years (mean 3.9 years) using the forearm Cimino-Brescia fistula in the left hand, were the subjects of this study. The electrophysiologic studies were performed at the end of a 4- to 5-hour dialysis with a one-channel Tonnie's Electromyograph at a constant room temperature of 27 °C. The motor conduction time along the median nerve was recorded in both hands with a concentric needle electrode in the abductor pollicis brevis muscle [5]. The distal motor latency was corrected to a standard distance of 6.5 cm [5]. The values thus obtained from patients were compared with those from 18 age- and sex-matched healthy volunteers.

Results and Comments

The pooled data (table I) revealed no significant difference between the distal motor latency of the fistulized

(left) limb with that of the contralateral limb and the control value. None of the patients had a median nerve distal motor latency two standard deviations or more beyond the mean control value.

Warren and Otieno [1] recorded symptoms considered to be due to CTS during hemodialysis in 23 out of 36 patients with forearm arteriovenous fistulae. The diagnosis of CTS was made on history alone; nerve conduction studies were not performed. In some of their patients, ischemia alone could have explained the symptoms. Harding and Le Fanu [2] described two patients in whom symptoms of CTS were provoked in the fistulized hand by hemodialysis; only one of them had objective neurologic signs and electrophysiologic abnormality to suggest a CTS.

Kumar et al. [3] felt that uremic peripheral poly-neuropathy might have contributed to the nerve conduction abnormality in two patients with post-vascular access CTS. Jain et al. [4] found that the CTS in patients undergoing maintenance hemodialysis was often bilateral and was unrelated

to the site of the arteriovenous fistula. In Holtmann and Andersons' [6] patients, symptoms of CTS developed 5–6 months after the vascular

Table I. Pooled data of corrected distal motor latency (mean $\pm$ SD) along the median nerve

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access had been removed, and dialysis had even been discontinued in one subject. Thus, the relationship of the CTS to the angioaccess and intermittent dialysis remains uncertain.

The present study did not reveal any evidence of CTS. A narrow carpal tunnel or a preexisting CTS may render the patient liable to develop manifestations of median nerve dysfunction. The predisposing factors seem to contribute more to the genesis of the CTS than the hemodynamic effects of the arteriovenous fistula or dialysis.

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