Letters to the Editor

Motor Conduction Velocity – Faster in Women?

Dear Sir,

Motor conduction velocity has become a standard way to evaluate diabetic polyneuropathy. Careful investigators match groups according to age since it is well known that conduction velocity falls with advancing age. Should groups also be matched for sex?

Ulnar motor conduction velocity was studied in 210 nerves (99 from men) and peroneal motor conduction velocity was studied in 206 nerves (112 men). No patient had evidence of a lower motor neuron lesion. Surface disk electrodes were used to record compound muscle action potentials from the hypothenar muscles and the extensor digitorum brevis. Percutaneous nerve stimulation was done with a TECA Te-4 instrument (TECA Corporation, Pleasantville, NY, USA). The ulnar nerve was stimulated at the wrist, below the elbow (8.1 cm below the medial epicondyle of the humerus) and above the elbow (11.3 cm proximal to the below elbow site). The peroneal nerve was stimulated at the ankle, neck of the fibula and in the popliteal fossa (9 cm proximal to the neck of the fibula site). Intramuscular tem-

perature was greater than 28° C in the extensor digitorum brevis and hypothenar muscles.

The patients ranged in age from 10 to 80 years, and the men and women were comparable in age (Table 1). Ulnar and peroneal motor conduction velocities were similar to those reported by Gregerson [2] and Thomas et al. [3]. The correlation coefficient of age versus motor conduction velocity in the ulnar and peroneal nerves ($r = -0.25$) and its slope ($-0.0772 \text{ m.s}^{-1}.\text{year}^{-1}$) were the same in men and women. Surprisingly the y-intercept (motor conduction velocity) was larger in women (Table 1).

Gregersen [2] has reported motor conduction velocity to be faster in women. His study, based on a relatively small number of nerves, suggested that motor conduction velocity fell with advancing age in men but not women. With a larger number of nerves, this study revealed that the y-intercept (motor conduction velocity) was higher in women while the slope for age versus conduction velocity was the same in men and women. This clearly demonstrated motor conduction velocity was faster in women independent of any effect of age. This difference could be explained if the temperature near nerves was warmer in women or motor axons were larger in women [1]. If conduction velocity varies with sex, then vulnerability to diabetic polyneuropathy may also.

Yours sincerely,

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Table 1. Peroneal and ulnar motor conduction velocity in men and women

	Nerves studied			
	Peroneal		Ulnar	
	Men	Women	Men	Women
Age of patients (years)	39 ± 15	46 ± 14	45 ± 12	42 ± 15
Number of nerves studied	112	94	99	111
Motor conduction velocity (m/s)				
Long segment ^a	48 ± 3.8	50 ± 3.7	55 ± 4.8	57 ± 4.6
Short segment ^a	48 ± 4.2	49 ± 4.0	58 ± 4.7	61 ± 5.9
Intercepts (m/s) ^b				
Long segment ^a	50.9	53.6	56.7	61.3
Short segment ^a	49.8	53.5	60.7	65.4

Results are expressed as mean ± SD. ^aLong segment was popliteal fossa to ankle for the peroneal nerve and above elbow to wrist for the ulnar nerve. Short segment was neck of the fibula to ankle for the peroneal nerve and below elbow to wrist for the ulnar nerve. ^bIntercepts were calculated using least squares linear regression. All intercepts were larger in women using a Newmann-Keuls test with $p < 0.01$

References

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2. Gregerson G (1967) Diabetic neuropathy: influence of age, sex, metabolic control and duration of diabetes on motor conduction velocity. *Neurology (NY)* 17: 972–980
3. Thomas PK, Sears TA, Gilliatt RW (1959) The range of conduction velocity in normal motor nerve fibres to small muscles of the hand and foot. *J Neurol Neurosurg Psychiatry* 22: 175–181

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