Diagnosis of multifocal motor neuropathy

We read with great interest Van Asseldonk and colleagues' review of the clinical features, diagnostic criteria, pathophysiology, and treatment of multifocal motor neuropathy (MMN).[1] The authors highlight that MMN is an immune-mediated disease in which the clinical picture mimics that of lower-motor-neuron disease (LMND). However, two very important features differ in these disorders: the neurophysiological picture and the responsiveness to treatment with intravenous immunoglobulin. Patients with MMN typically have conduction block in motor nerves, whereas those with LMND do not;[2] hence, conduction block is key in the differential diagnosis. Conventional neurophysiological methods do not always detect conduction block and temporal dispersion may mimic conduction block, so the ability to distinguish these depends largely on the electrodiagnostic criteria used.[3] Intravenous immunoglobulin is effective in the treatment of MMN[4] but not in treatment of LMND. We therefore need to distinguish compound-motor-action-potential (CMAP) decay caused by temporal dispersion from real conduction block.

In 2001, we assessed the usefulness of single-fibre-electromyography nerve-conduction recording (SFEMG-NC) for the detection of partial conduction block.[5] In this technique, a needle electrode is inserted into the muscle and supramaximal stimulation is applied at two different sites of the nerve, both distal and proximal to a region in which we suspected conduction block. We studied 17 patients with clinical pictures strongly suggesting the presence of motor conduction block.[5] We used the American Association of Electrodiagnostic Medicine consensus criteria for the standard conduction-block tests. Sensitivity and specificity of SFEMG-NC were respectively 94% and 100%. We now routinely use this technique to distinguish patients with amyotrophic lateral sclerosis from those with motor neuropathy and conduction block. Our data strongly suggest that SFEMG-NC is useful in distinguishing real conduction block from CMAP decay due to temporal dispersion.

We completely agree with Van Asseldonk and colleagues that nerve conduction should be extensively studied to select patients with conduction block who might respond favourably to intravenous immunoglobulin and we think that SFEMG-NC is a useful complementary assessment in solving this important issue.

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Authors' reply

Caliandro and colleagues have developed an elegant technique to study conduction block in individual axons. With this technique the difficulty of separating temporal dispersion from conduction block can be avoided. Although SFEMG-NC is a promising technique for detection of conduction block, whether it is of additional value to nerve conduction studies in the identification of patients with MMN is unknown.

We used another approach to separate temporal dispersion from conduction block by simulating the maximal effects of temporal dispersion on CMAPs using surface recorded motor unit action potentials in human beings.[1] Less stringent criteria for conduction block may be used when temporal dispersion is limited. Also, the criteria based on our findings need to be validated in future studies.

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1 Van Asseldonk J-T, Wieneke G, Van den Berg LH, Wokke JHJ, Franssen H. Criteria for conduction block: computer simulation using human data. *Muscle Nerve* 2003; **28** (suppl 12)**:** S151.