



Letter to the Editor

Ia afferent fibers in peripheral nerve disorders: Evidence for divergent vulnerability



We read with interest the paper by Sukockienė et al. (2020) showing that areflexia in multifocal motor neuropathy (MMN) could be caused by predominant involvement of group Ia afferents with relatively preserved cutaneous afferents. In Fisher syndrome the major targets of immune attack by anti-GQ1b antibodies appear to be group Ia neurons in dorsal root ganglia, which is presumably responsible for ataxia and areflexia in this syndrome (Sekiguchi et al., 2013). By analogy, Magistris et al. (2020) hypothesized that an impairment of conduction in Ia afferents may also be responsible for the areflexia in Guillain-Barré syndrome (GBS). We wish to add further information on divergent vulnerability of Ia afferents in two peripheral nerve disorders: GBS, and cerebellar ataxia, neuropathy and vestibular areflexia syndrome (CANVAS) (García et al., 2018; Infante et al., 2018).

We reported in 2018 a 36-year-old patient with a final diagnosis of classical GBS, who was admitted with a 5-day history of ascending foot and hand paresthesias, throbbing inter-scapular and neck pain, and tetraparesis (García et al., 2018). On day 7 there was generalized areflexia. Serial nerve conduction studies (NCS) were carried out on days 7 and 33 after onset. On initial NCS there was an equivocal pattern, just an isolated reversible conduction failure (RCF) being detected on the right radial nerve. Conduction parameters of median, ulnar, peroneal, tibial and sural nerves as well as somatosensory evoked potentials (SEP) from median and tibial nerves were preserved. On F-wave recordings there were reversible abnormalities consisting of multiple A waves and low F-wave persistence, minimal F-wave latencies being preserved. Biceps brachii T-reflex was normal, whereas Achilles T-reflex was absent bilaterally. On second NCS, Achilles T-reflex was present bilaterally showing normal morphology and latency, thereby conforming to the requirements for RCF diagnosis. Soleus H-reflex was also initially absent. We argued that initial absence of Achilles T-reflex followed by full recovery, in the context of preserved lower-limb sensorimotor NCV (Nerve conduction velocity) and SEP, suggest that RCF particularly involves afferent Ia fibers.

Sukockienė et al. (2020) reported two MMN patients showing bilateral absence of patellar and Achilles tendon reflexes despite normal strength of quadriceps and calf muscles. As observed in our GBS case, the sensory conduction studies were normal or minimally altered, patellar (tendon) responses were virtually absent, and H-reflex to the quadriceps and soleus muscles were absent. Furthermore, they described normal M-wave amplitudes and high motor-evoked potential/M amplitude ratios to the quadriceps muscle confirming the functional integrity of the motor pathways. The authors argued that absent tendon jerks and T-responses in otherwise unaffected lower limbs attracted their attention and eventually led to the first description of Ia afferent involvement in MMN.

In 2018, we reported five CANVAS patients with preserved upper- and lower-limb tendon jerks and marked rombergism (Infante et al., 2018). NCS demonstrated normal motor conduction parameters and absence or severe attenuation of sensory nerve action potentials. SEPs were also absent or severely attenuated. Biceps and femoral T-reflex recordings were normal in all four evaluated cases, whereas Achilles T-reflex were absent in two of them. We argued that CANVAS is a unique syndrome with selective sparing of Ia fibers sub-serving muscle spindle afferents, in a setting of severe somatic sensory neuropathy with widespread central-peripheral axonopathy, and that such Ia afferent sparing is probably the pathophysiological basis of the observed normoreflexia. Such pathophysiology should be corroborated by further studies.

Summarizing, in the hallmark of peripheral nerve disorders, Ia afferent fibers may exhibit a variable vulnerability ranging from preferential involvement to preservation, T-reflex testing being a useful technique for assessing their functional status.

Declaration of interests

None.

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