Variability of the palmar cutaneous branch median nerve sensory nerve action potential with carpal tunnel syndrome

Sir,

The palmar cutaneous median branch (PCBm) sensory nerve action potential (SNAP) can be useful in investigating hand sensory symptoms.^[1,2] The PCBm SNAP when recorded using an antidromic technique yields two negative peaks followed by the motor potential [Figure 1a]. The first negative peak represents the PCBm SNAP; the second peak a far field potential from transcarpally mediated hand sensory nerve fibers traveling to the thumb.^[3] The second peak is a consequence of not being able to selectively



Figure 1a: In this normal hand, the PCBm conduction velocity is 62.2m/ second and for the median transcarpal digital sensory conduction, 50 m/second



Figure 1b: In this hand with moderate CTS, the PCBm conduction velocity is 66.7 m/second and the median transcarpal digital sensory nerve conduction is slowed at 25 m/second. The latter has caused the two peaks to separate out



Figure 1c: In this hand with extreme CTS (absent motor response), the PCBm conduction velocity is normal at 69 m/second, median transcarpal digital sensory nerve conduction is absent

stimulate the PCBm. The first and second peak are in close proximity with the first having the appearance of a shoulder sticking out from a hill. It is important to be cognizant of how this shape alters with median nerve entrapment in carpal tunnel syndrome (CTS).^[4]

When the transcarpal median sensory fibers are solely affected in CTS, this results in the first and second peaks separating out. With increasing pathology of transcarpal fibers [Figure 1b], the degree of separation increases and in severe CTS can result in a lone SNAP from the PCBm [Figure 1c].

- 1 = PCBm sensory onset latency
- 2 = PCBm sensory peak latency
- 3 = Median transcarpal digital sensory peak latency
- 4 = Median motor onset latency

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