신경근육재활 및 전기진단

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 15:45-16:30 Room G(3F)

P 2-135

Atypical carpal tunnel syndrome: fascicular predominance vs. concurrent recurrent motor neuropathy

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Carpal tunnel syndrome (CTS) is the most common entrapment neuropathy and physicians are prone to overlook CTS variants. Here, we report 2 cases of atypical carpal tunnel syndromes, those which could be differentiated with electrodiagnostic findings.

A 64-year old female presented with 3-month history of left hand tingling sensation. MRC scale for left thumb abduction was grade 4/5. Hypoesthesia was noticed in her 1-3rd fingers. Left thenar muscle atrophy accompanied. The left median motor response was of prolonged latency and low amplitude (5.1msec, 0.2mV). The left 2nd lumbrical and 1st palmar interossei latency comparison study (2L-PI) revealed low amplitude with 2nd lumbrical recording (2L: 3.5msec, 0.1mV, PI: 3.3msec, 6.8mv). The left median sensory responses were of prolonged latencies and low amplitudes with the 1-3rd digit recordings, but was substantially lower in the thumb (middle finger 11μV, thumb: 2μV). This patient was diagnosed moderate to severe degree of left CTS, but with predominant involvement of fascicles to motor nerve and sensory nerve to the thumb. Sonographic findings and magnetic resonance imaging revealed a 2x1x8cm mass arising from the median nerve which compressed the volar-radial portion of the nerve. These findings were compatible with electrodiagnostic findings considering the fascicular distribution of the median nerve; the motor fascicles to the thenar eminence is located in the radial side and the sensory fascicles to the thumb is predominantly located in the volar-radial side of the nerve.

A 66-year old female patient presented with 1-month history of right thumb weakness. MRC scale for right thumb abduction was grade 3/5. There was no sensory loss. The right median motor response was of low amplitude (4.2msec, 2.2mV). 2L-PI study revealed positive findings for CTS (2L: 3.9msec, 1.8mV, PI: 2.9msec, 4.9mV). The right median sensory response revealed low amplitude (right: 23μV, left: 45μV) and the 5-cm short segment study revealed prolonged latency (1.4msec). The 2L-PI study and sensory conduction study revealed mild degree of right CTS, but the findings of motor conduction study were compatible with severe neuropathy of the right recurrent motor branch of the median nerve. Surgical findings revealed that the recurrent motor branch trespassing the transverse carpal ligament was being compressed by an aberrant vessel. The orthopedic surgeon ligated the aberrant vessel and released the fascia compressing the recurrent motor branch and also open carpal tunnel release was performed. The patient fully recovered thereafter.

Through precise analysis of electrodiagnostic findings, correct diagnosis of atypical patterns of CTS was achieved and proper management such as open carpal tunnel release rather than endoscopic surgery could lead to favorable outcome.

Table 1. Motor and sensory nerve conduction study of Case No. 1

Motor nerve conduction								
Side	Nerve	Stimulation site	Recording site	Latency (msec)	Amplitude (mV)	Distance (cm)	NCV (m/sec)	F wave (msec)
Left	Median	wrist	APB	5.1*	0.2*	18	53	27.2
	Ulnar	wrist	ADM	2.9	13.8	17	65	25.5
Left	Median	wrist	2nd lumbrical	3.5	0.1*			
	Ulnar	wrist	1st palmar interosseous	3.3	6.8			

Sensory nerve conduction						
Side	Nerve	Stimulation site	Recording site	Onset/peak latency (msec)	Amplitude (μV)	Distance (cm)
Left	Median	wrist	Ⅲ digit	3.6/4.4*	11*	14
		palm	Ⅲ digit	0.9/1.6	20	7
		wrist	Ⅱ digit	2.9/3.8*	9*	14
		wrist	Ⅰ digit	3.0/4.2*	2*	10
	Ulnar	wrist	V digit	2.8/3.6	24	14

NCV: nerve conduction velocity, APB: abductor pollicis brevis, ADM: abductor digiti minimi,

Abnormal cutoff value based on median-to-2nd lumbrical compared with ulnar-to-palmar interosseous > 0.6 msec

Abnormal values are represented with asterisk.

Table 2. Motor and sensory nerve conduction study of Case No. 2

Motor nerve conduction								
Side	Nerve	Stimulation site	Recording site	Latency (msec)	Amplitude (mV)	Distance (cm)	NCV (m/sec)	F wave (msec)
Right	Median	wrist	APB	4.2	2.2*	17.5	58	25.2
	Ulnar	wrist	ADM	3.3	8.2	15	65	23.6
Right	Median	wrist	2nd lumbrical	3.9*	1.8			
	Ulnar	wrist	1st palmar interosseous	2.9	4.9			
Left	Median	wrist	2nd lumbrical	3.5	2.4			
	Ulnar	wrist	1st palmar interosseous	3.0	6.7			

Sensory nerve conduction						
Side	Nerve	Stimulation site	Recording site	Onset/peak latency (msec)	Amplitude (μV)	Distance (cm)
Right	Median	wrist	Ⅲ digit	2.6/3.3	23*	14
		palm	Ⅲ digit	1.0/1.8	24*	7
		wrist	Ⅱ digit	1.8/2.4	31*	14
		wrist	Ⅰ digit	2.4/3.0	28*	10
	Ulnar	wrist	V digit	2.4/3.2	22	14
Left	Median	wrist	Ⅲ digit	2.3/3.0	45	14

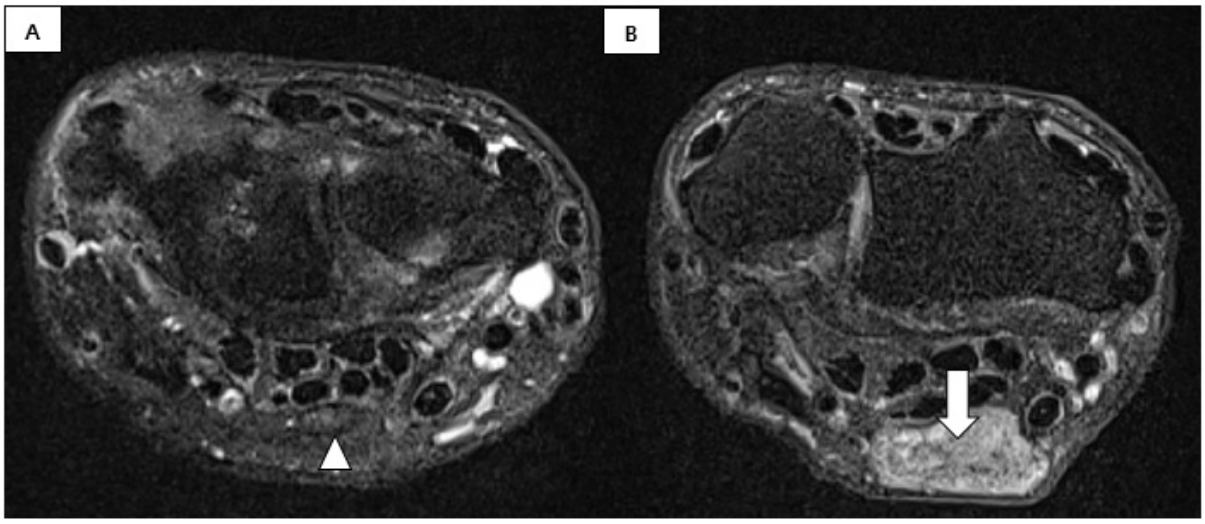

Figure 1. The median nerve (arrowhead, A) is being compressed by a mass arising from the median nerve, especially in the radial-volar side of the nerve (arrow, B)