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– Abstract –

Diagnostic Criteria of Conduction Block and Abnormal Temporal Dispersion

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Objective : Conduction block and abnormal temporal dispersion are important electrophysiological parameters for demyelination. Many people have reported different criteria of the conduction block in amplitude, duration, area and insisted that the criteria should be different between each nerves of human race. The aims of the present investigation were to evaluate the amplitude, duration, and area ratio of compound muscle action potentials (CMAP) in the proximal to distal parts of the limbs, so to stand firm the diagnostic criteria between conduction block and abnormal temporal dispersion.

Methods : Measurements were made from median nerve, ulnar nerve, deep peroneal nerve, tibial nerve of 44 upper extremities and 38 lower extremities with Excel® electromyographic equipment in normal adults who don't have any history and signs of peripheral neuropathies, and compared the CMAP ratios (proximal CMAP/distal CMAP) of peak to peak amplitude, negative duration area.

Results : Our study showed that the reduction of CMAP amplitude with proximal stimulation ranges from 18.4% to 22.2% in upper extremities and from 28.1% to 28.9% in lower extremities. The change of negative-peak duration ranged from 11.0% to 13.9% in upper extremities and from 17.9% to 25.0% in lower extremities. It was also showed that higher amplitude decay and the change of negative-peak duration in peroneal nerve are prominent.

Conclusion : This study can provide useful and reliable informations on diagnostic criteria of conduction block by more than 25% drop of peak-to-peak amplitude with less than a 15% change of the negative-peak duration in upper extremities and by more than 30% drop of peak-to-peak amplitude with less than a 25% change of the negative-peak duration in lower extremities.

Key Words : Conduction block, Temporal dispersion, Diagnostic criteria, Nerve conduction, Amplitude decay, Negative peak duration

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(conduction block)

가

(axon)
(myelin)

1.

.¹ Wallerian

가

가

가

44 , 38

19 25 ,

20 18 ,

10 50

.²

(Table 1).

2.

(Excel , Cadwell, USA)

Gain 200 μ W/div, filter setting 20 hz~10 khz

(physiologic

31

temporal dispersion)

(forearm segment)

가

가 (arm segment)

Brown M

20% 가 ,

10% 가가

.¹ Oh

ment)

가

가 (leg seg-

가가

(thigh segment)

50% 가

(amplitude), (area)

(%)

.³

Taylor Oh

.^{4,5}

(duration)

dispersion

가

Amplitude decay(%)=(Amp_d - Amp_p)/Amp_d × 100

Amp_d=

Table 1. Demographic Data

No. of Subjects	Age							Total
	<10	10~20	20~30	30~40	40~50	50~60	>60	
Median & Ulnar nerve								
Male	1	2	5	3	5	2	1	19
Female	0	4	6	5	4	5	1	25
Peroneal & Tibial nerve								
Male	0	4	6	4	3	3	0	20
Female	1	2	3	3	5	3	1	18

4.7%, 12.6%, 6.9%, 4.7%, 19.2%, 18.4%, 22.2%, 22.9%

가 (Fig. 4). 가

4) 13.9%, 12.7%, 11.4%, 11.0%

3.4%, 2.4%, 24.7%, 17.9%, 25.0%, 18.4%

(P<0.05) (P<0.05, Table 2).

가 (Fig. 5).

5) 5.4%, 5.9%

12.3%, 8.5%

(P<0.05)

(Fig. 6). 가

6) 6.4%, 6.5%

8.5%, 10.5%

(P<0.05, Fig. 7).

7) + 2x (parameter) 가 (demyelination)

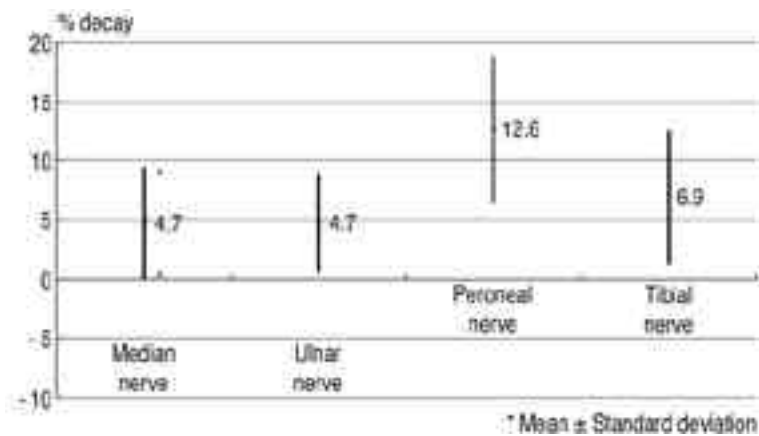


Fig. 4. Duration % decay in forearm and leg

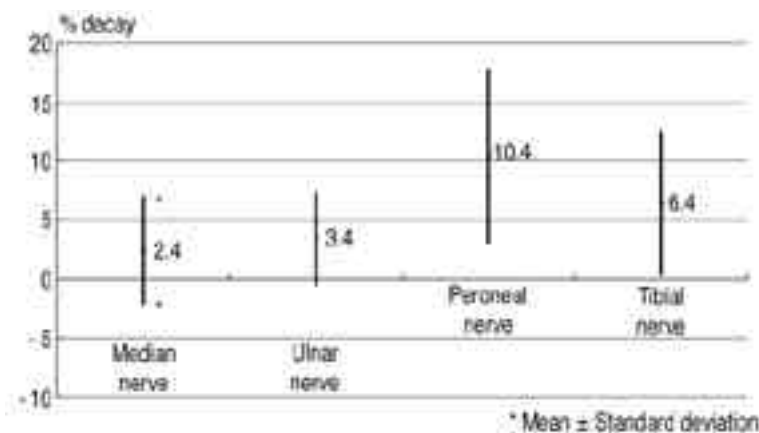


Fig. 5. Duration % decay in arm and thigh

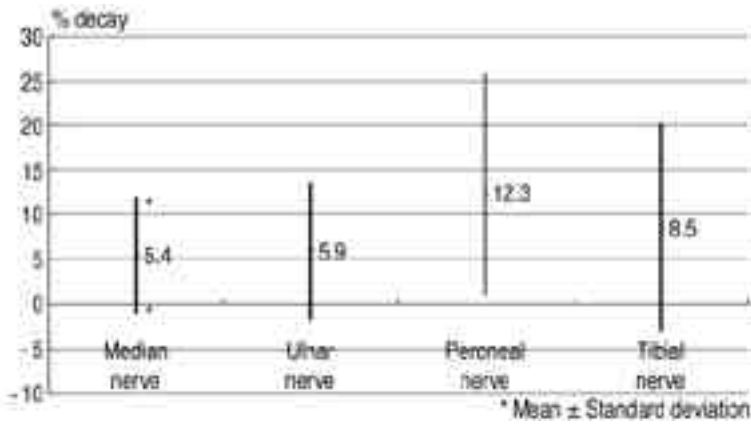


Fig. 6. Area % decay in forearm and leg

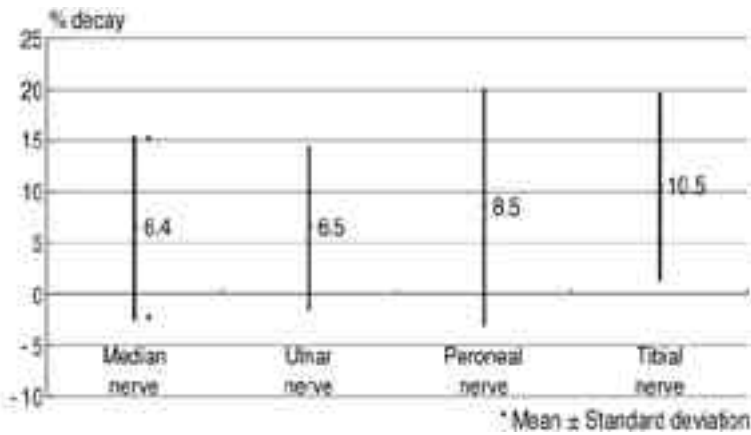


Fig. 7. Area % decay in arm and thigh

3)

25%
가 30%

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