



*La richiesta di competenza neurologica
nel prossimo futuro
Sesta edizione*

NEUROFISIOLOGIA: Principi di ENG e sua interpretazione

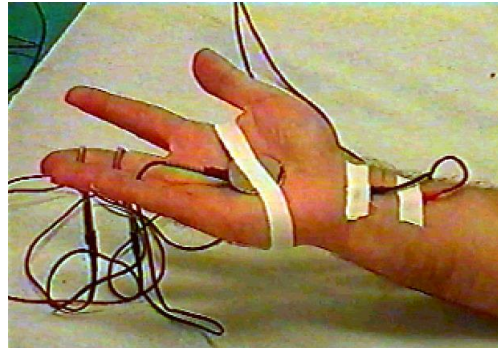
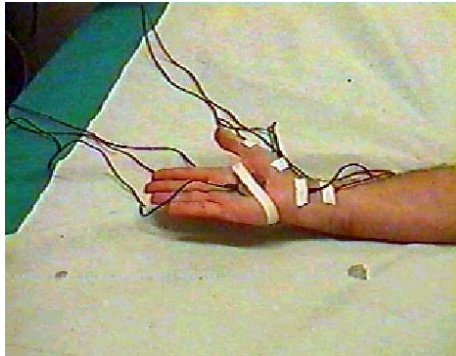
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Fondazione Policlinico Gemelli IRCCS
UOC Neurologia
Università Cattolica del Sacro Cuore
Dipartimento di Neuroscienze

Gemelli



INDAGINI ELETTROFISIOLOGICHE

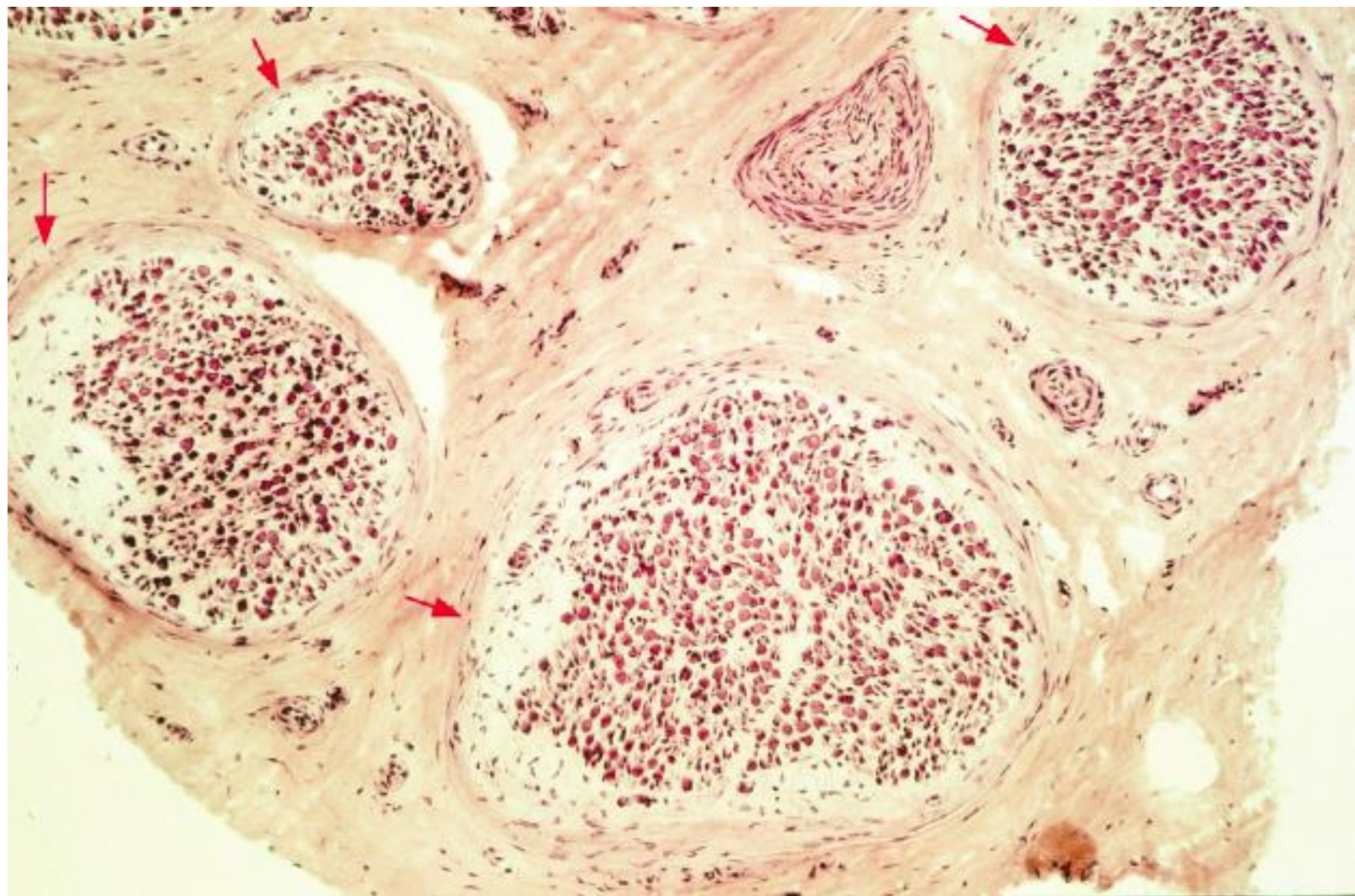
- **ELETTRONEUROGRAFIA**

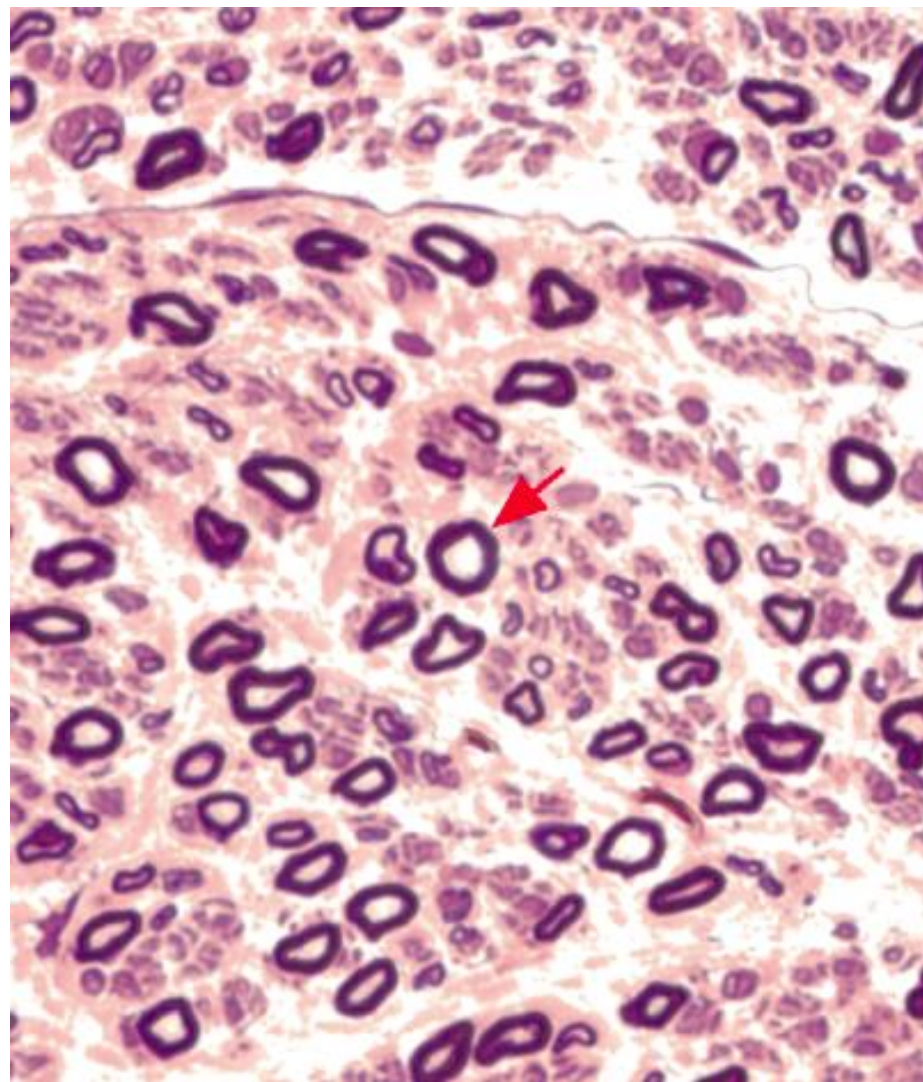
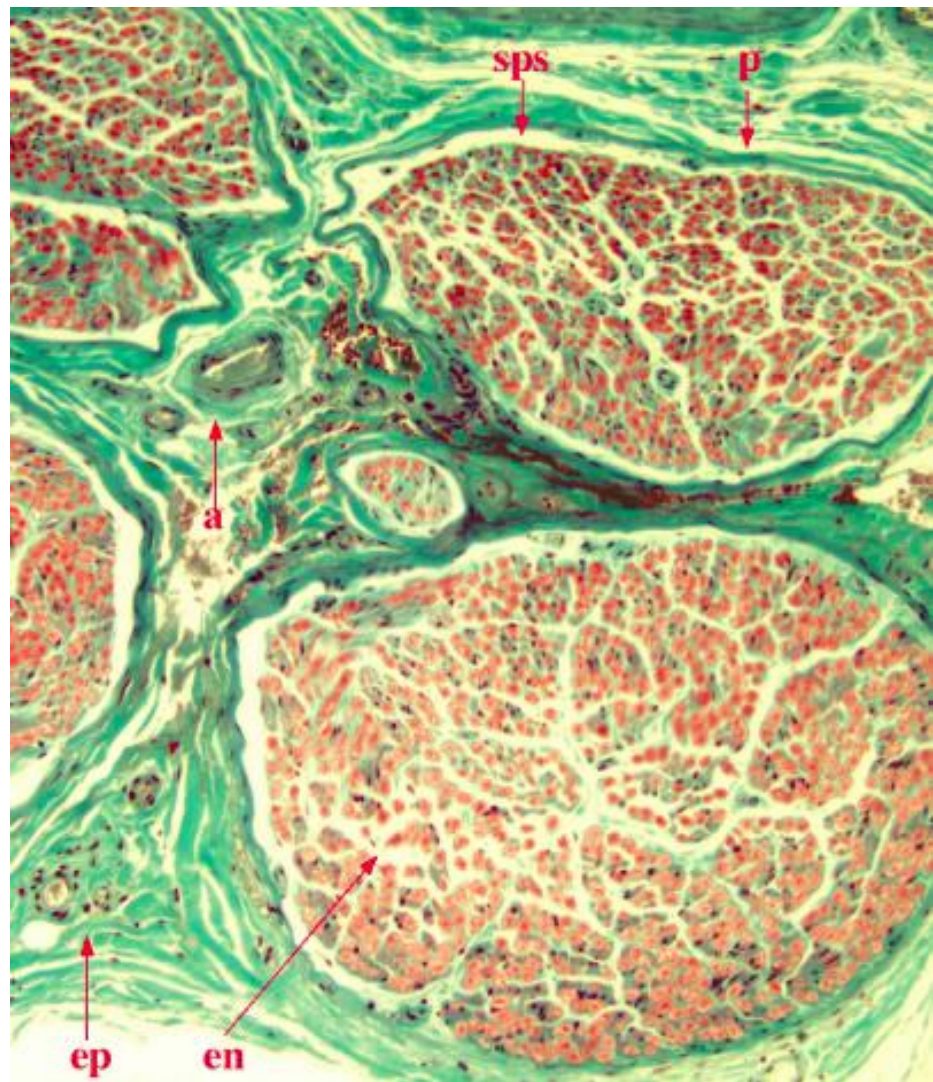


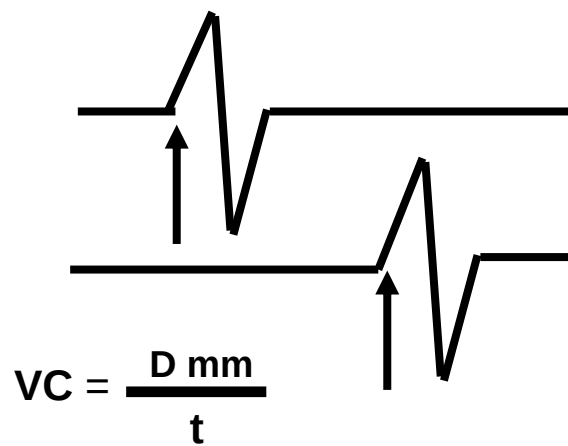
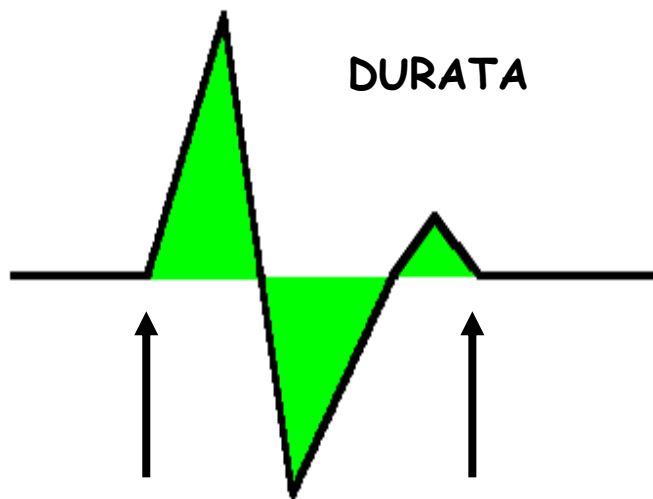
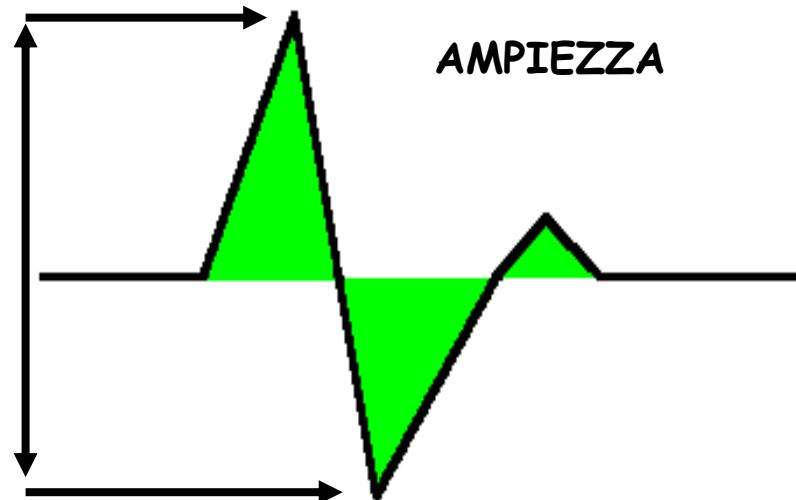
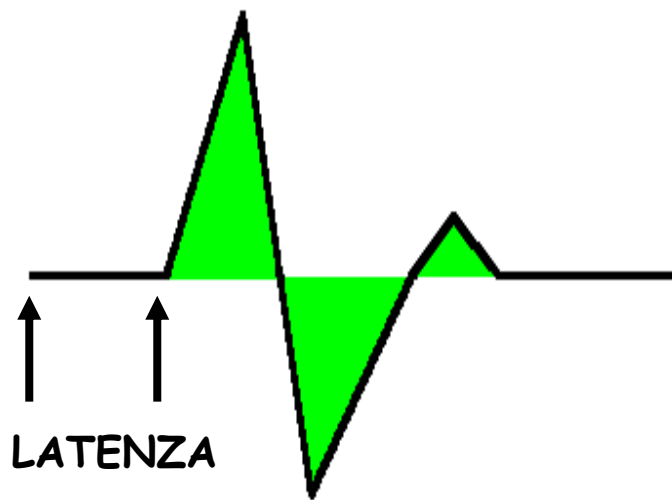
- **ELETTROMIOGRAFIA**



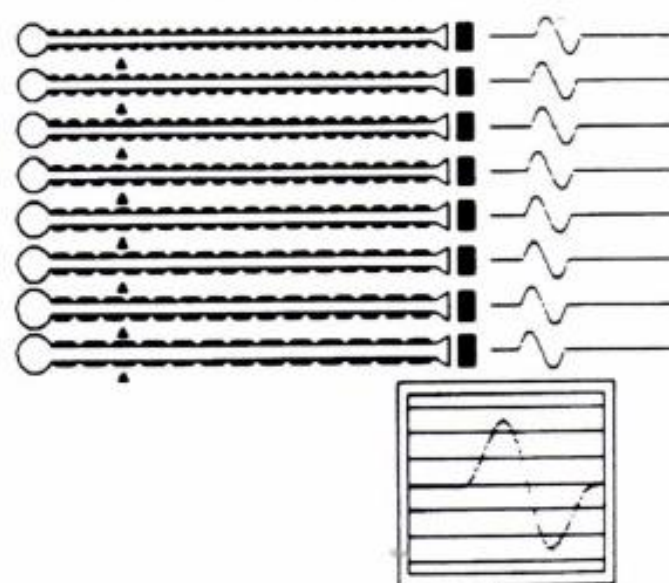
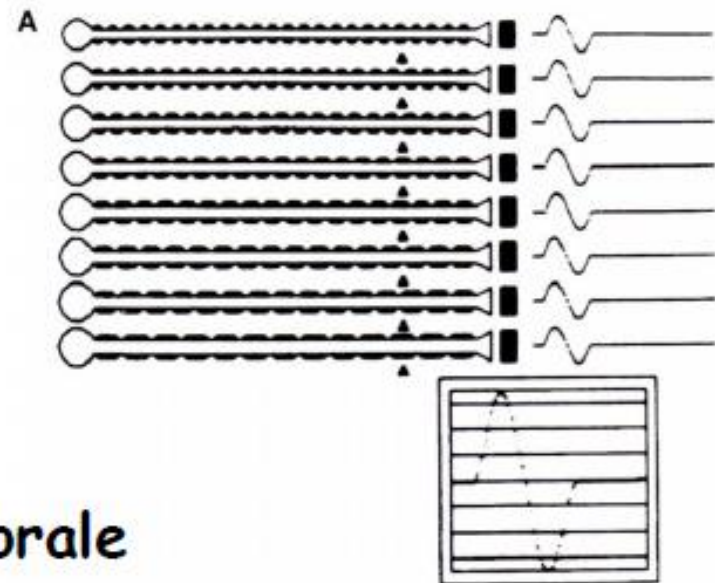






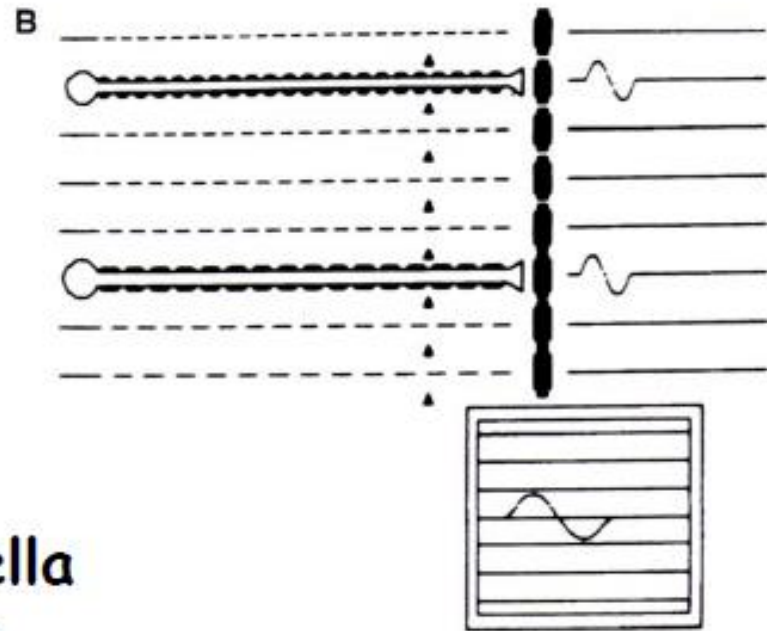


Fisiologica dispersione temporale delle fibre motorie

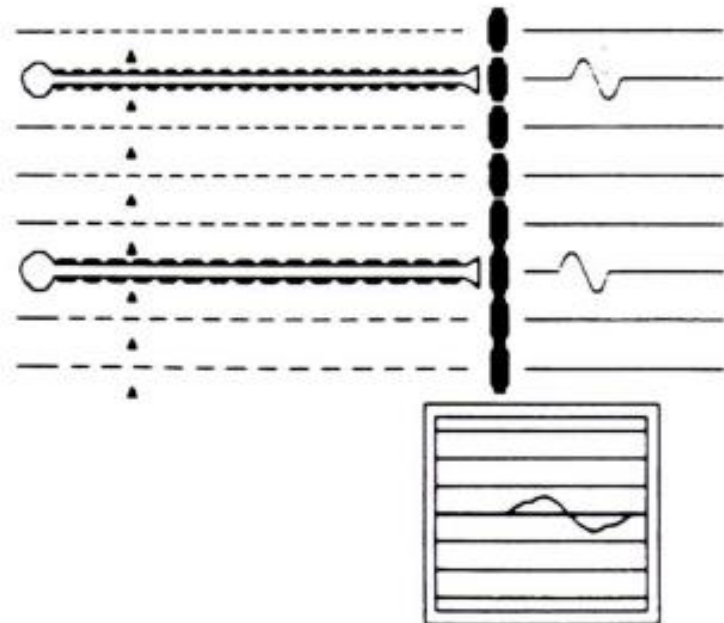


Polineuropatie assonali

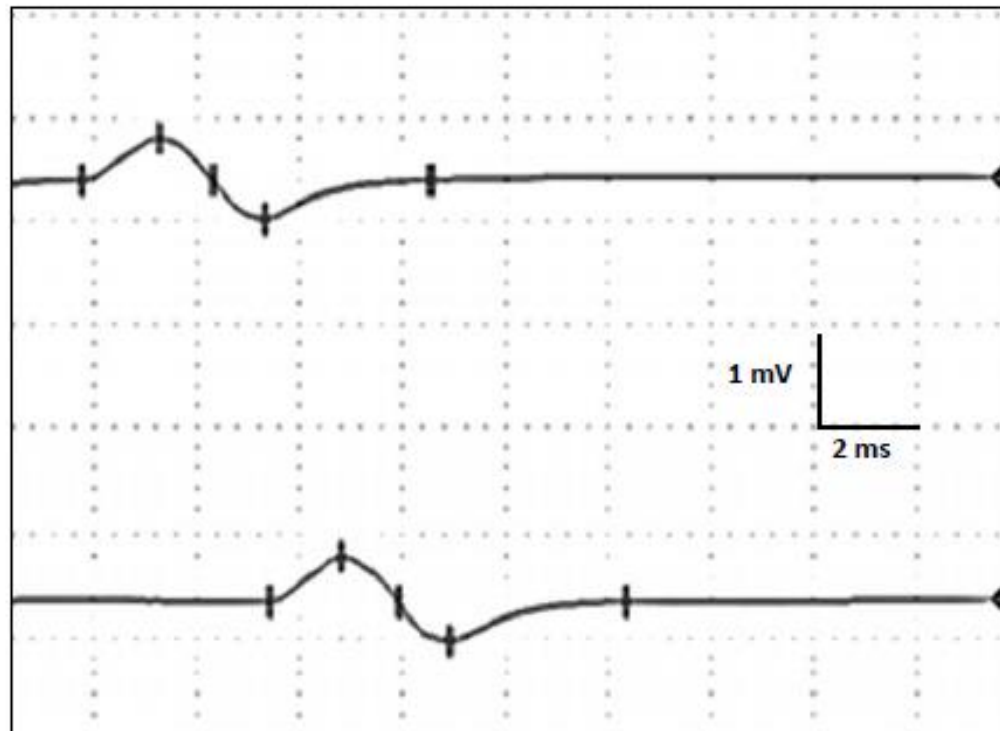
Pattern di segnali ridotti:
conduzione nervosa modicamente od
affatto rallentata con caduta di
ampiezza più o meno evidente dei
potenziali motori e/o sensitivi



Variazione di ampiezza nella
degenerazione assonale

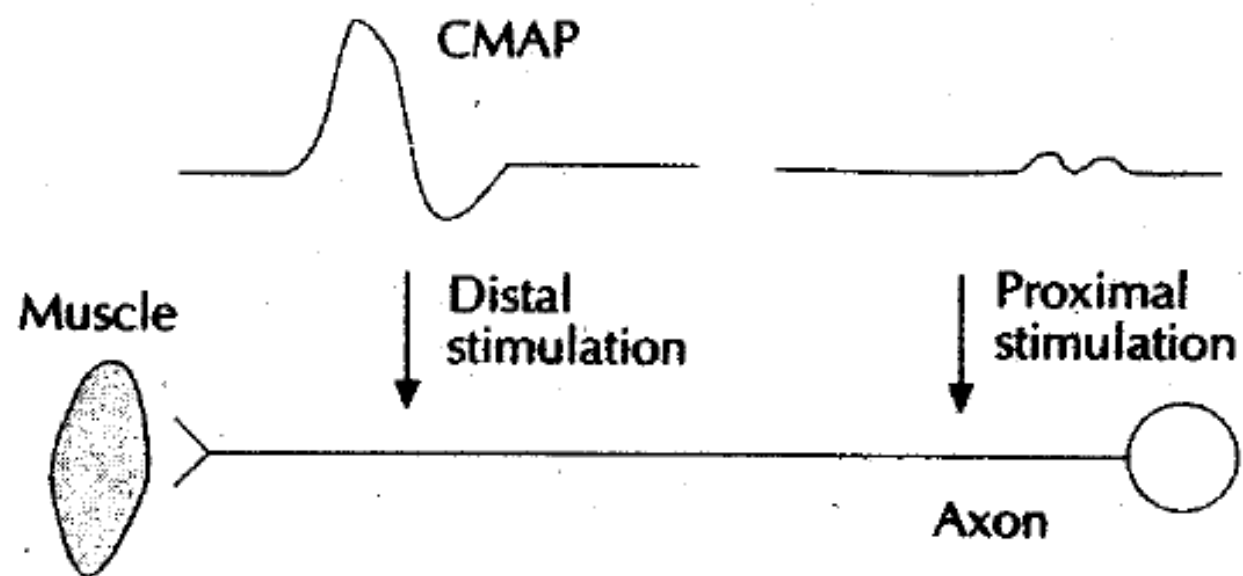


NERVO PERONEALE PROFONDO DESTRO MOTORIO

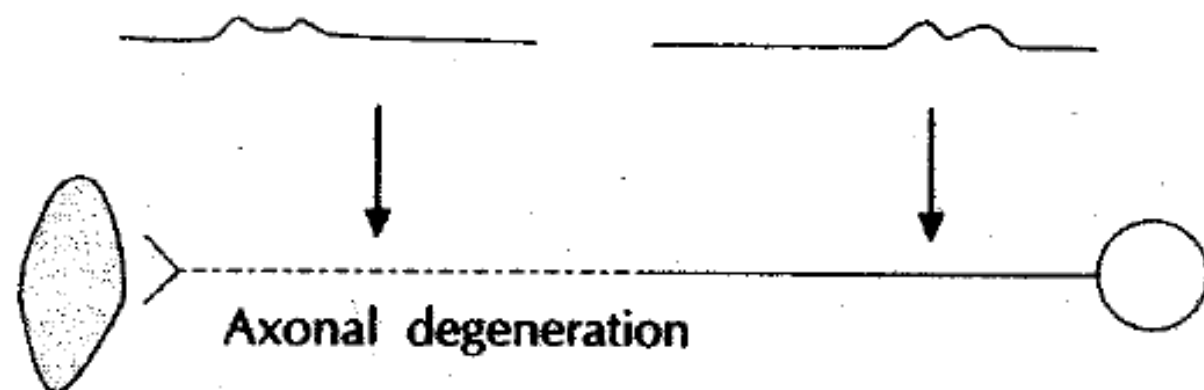


Siti	Lat	Amp	VC
caviglia	4.4	0.8	39.2
capitello	13.6	0.7	

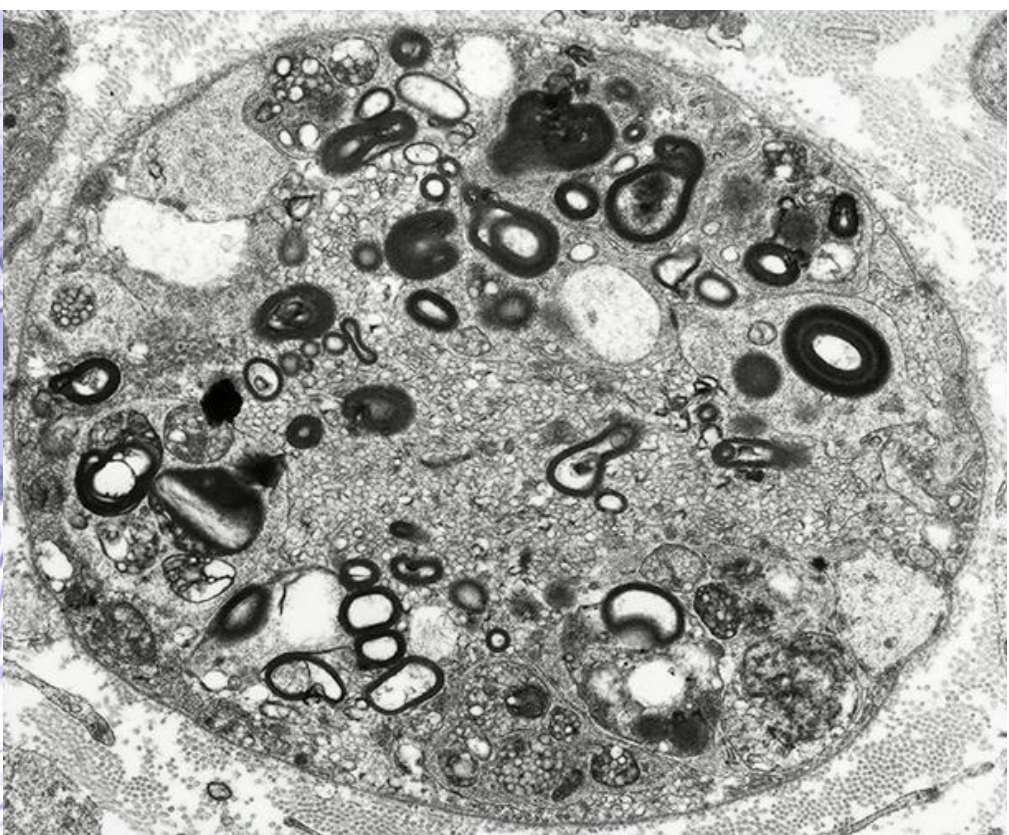
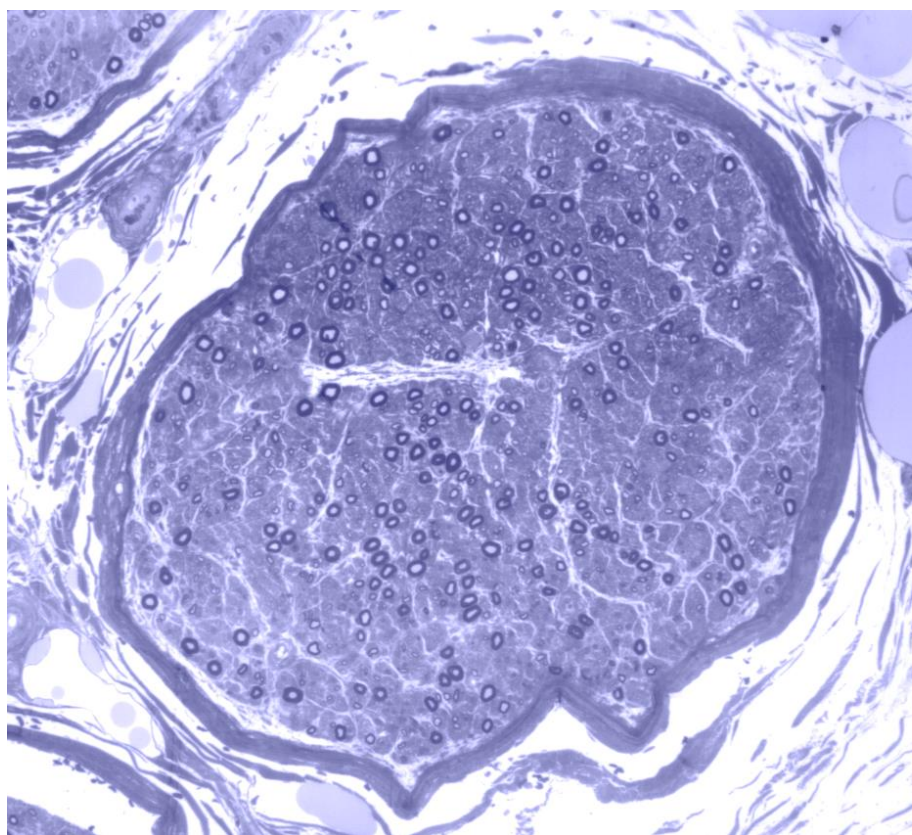
(a)



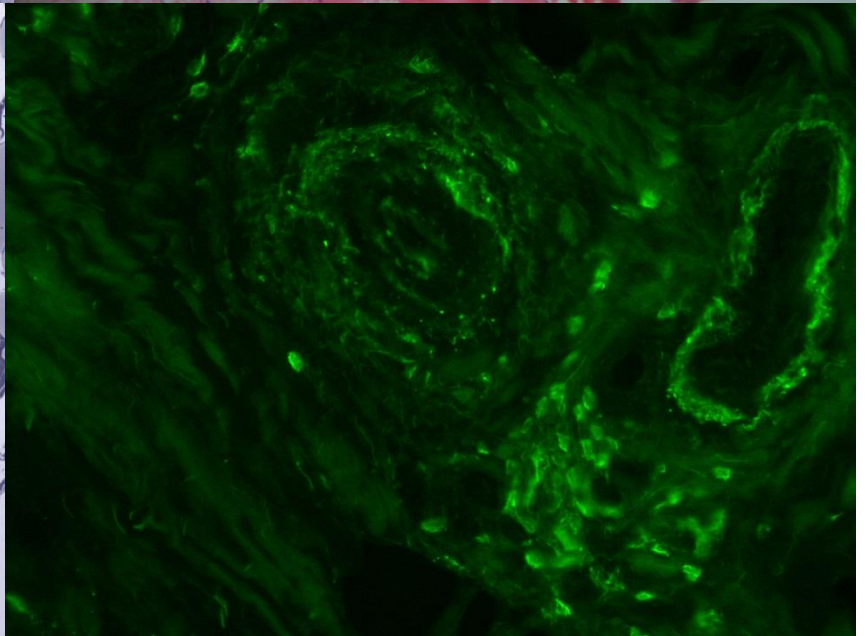
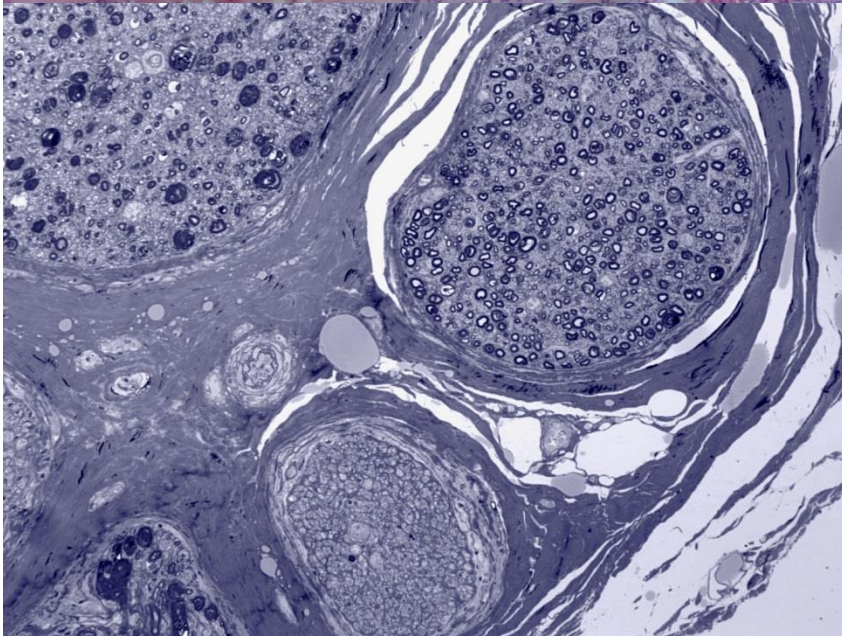
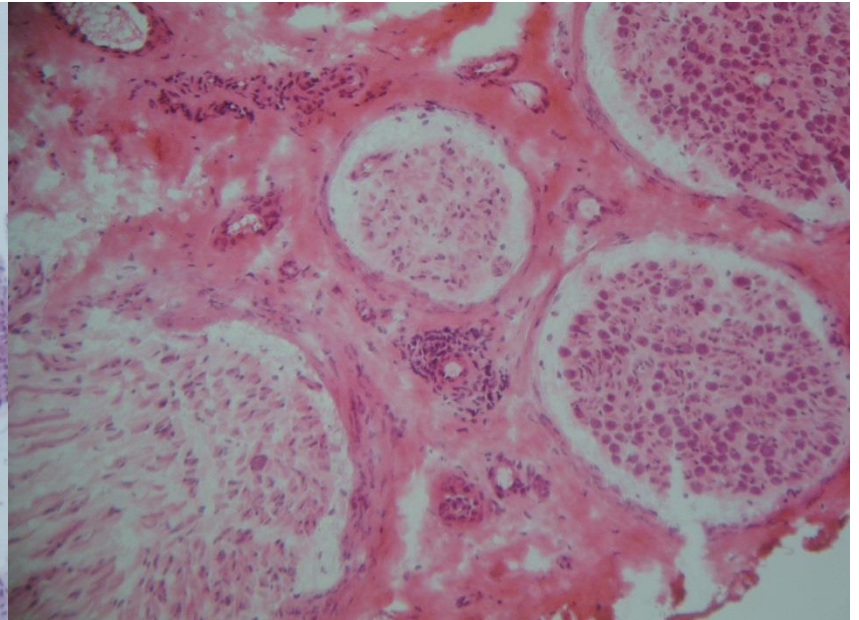
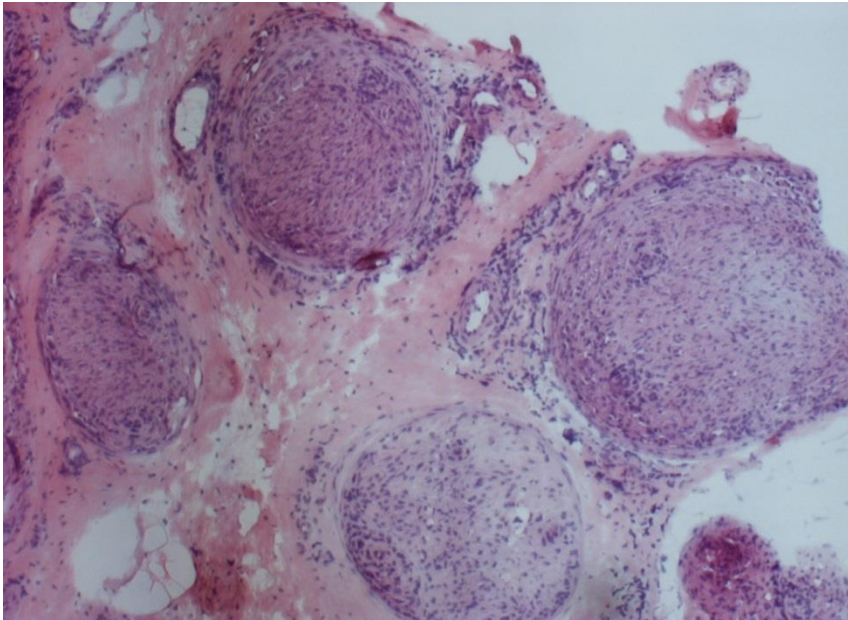
(b)



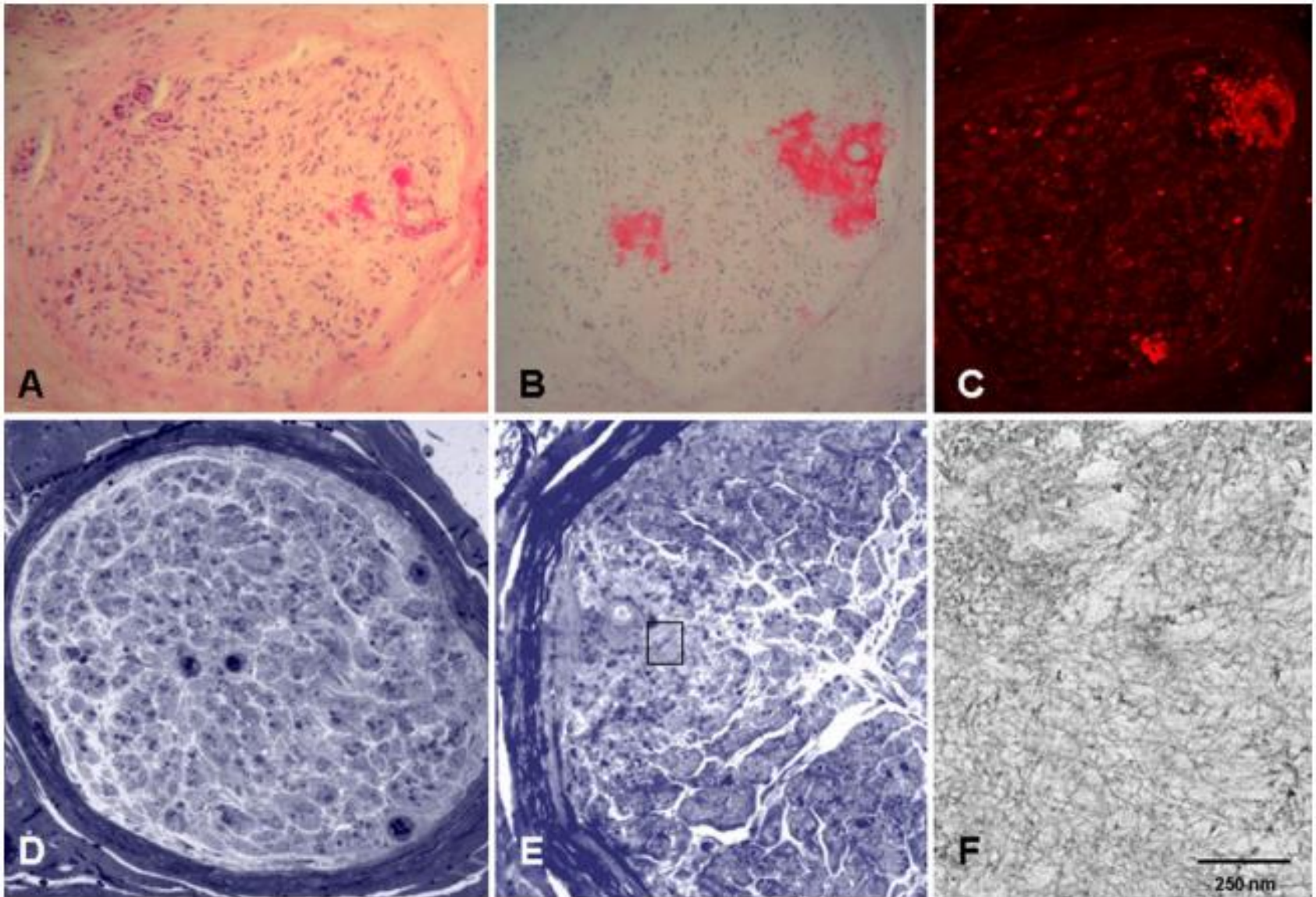
Polineuropatia diabetica



Polineuropatie vasculitiche

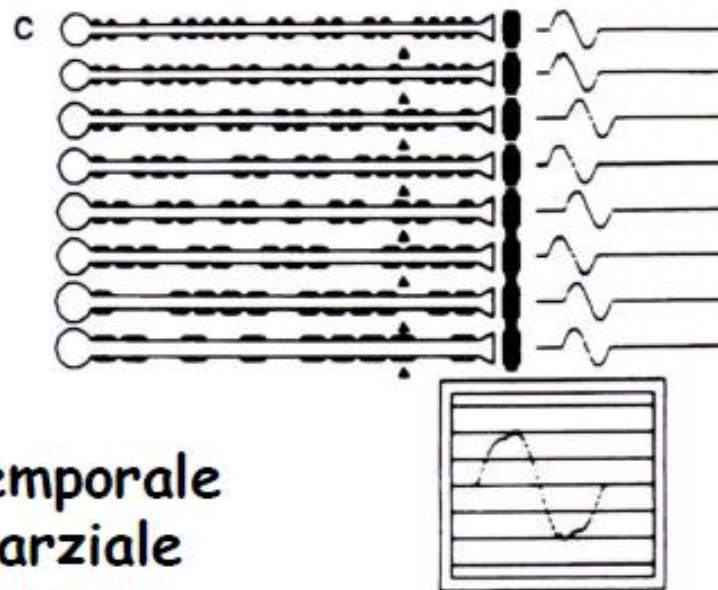


Polineuropatia amiloidosica

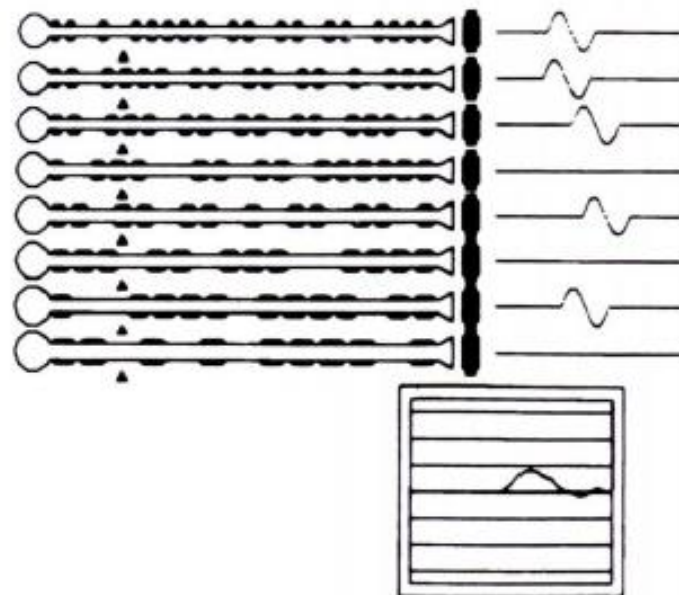


Polineuropatie demielinizzanti (acquisite?)

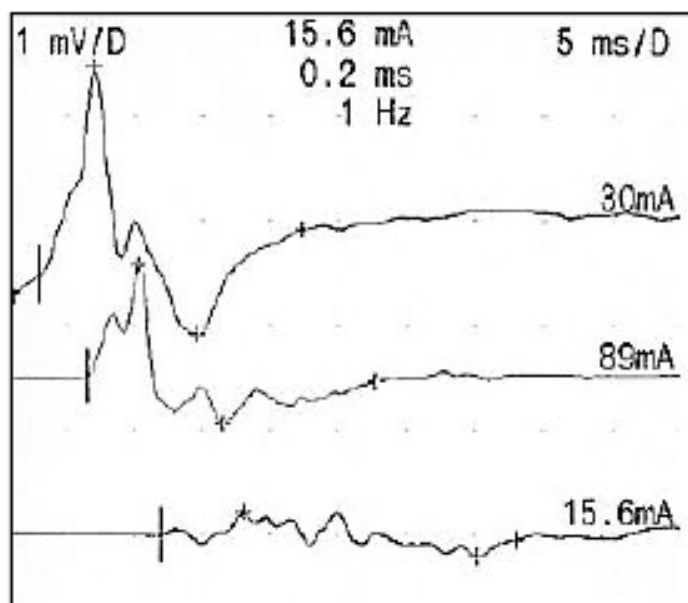
Pattern di rallentamento e/o
desincronizzazione dei segnali:
rallentamenti non omogenei, più
evidenti per la conduzione motoria,
dispersione temporale e possibili
blocchi di conduzione



Accentuata dispersione temporale
e blocco di conduzione parziale
nella demielinizzazione

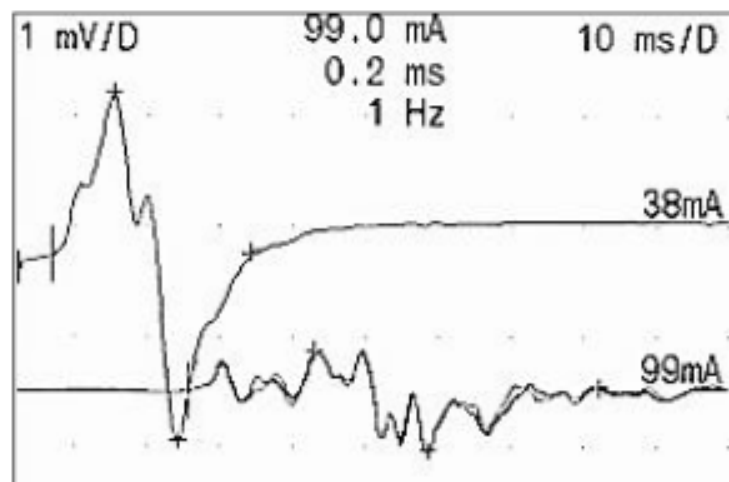


NERVO ULNARE SINISTRO VCM



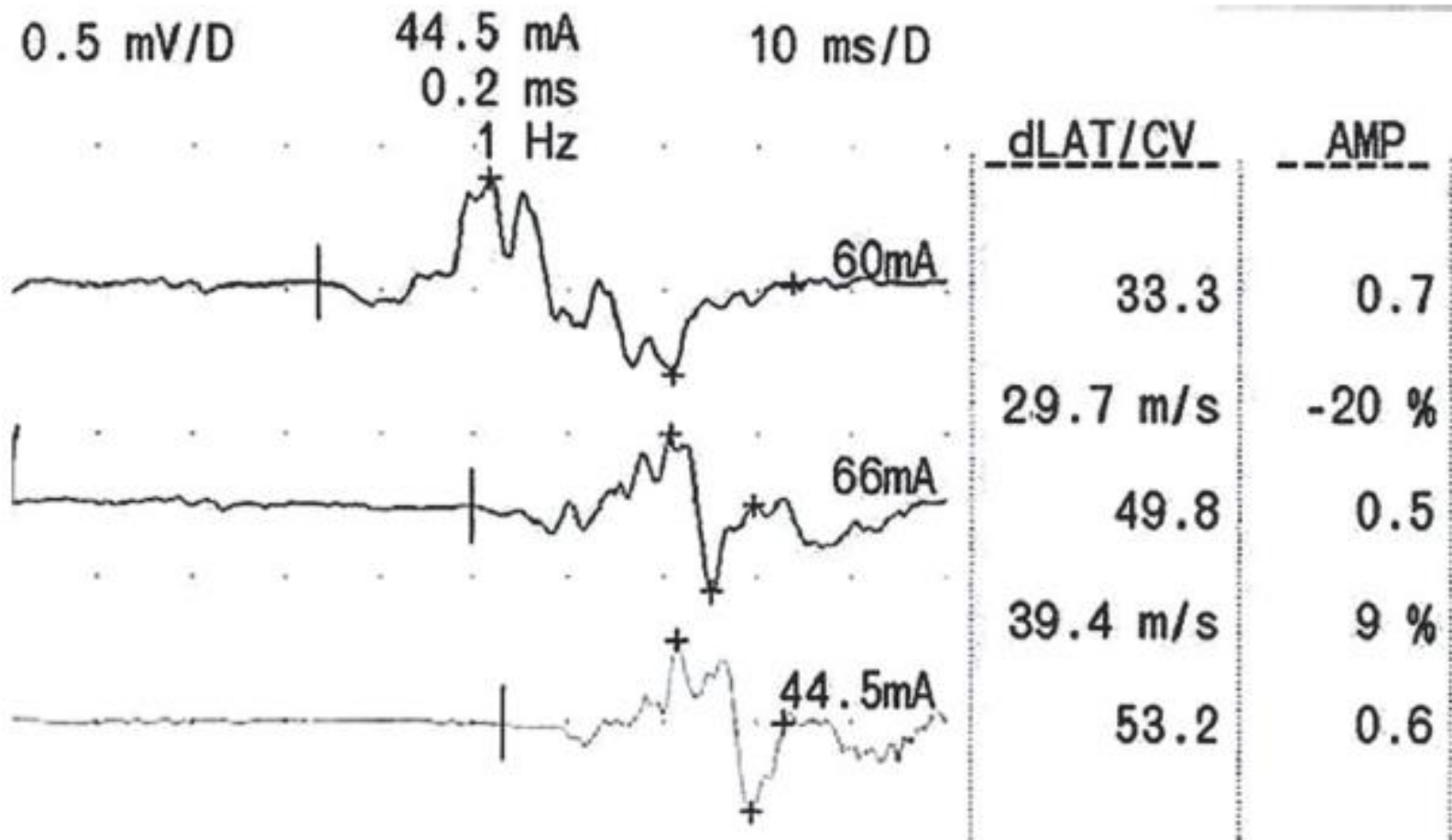
Siti	Lat	Amp	VC	Area	Durata
polso	2.9	2.6	33.2	9	19.4
avambraccio	6.6	1.5		6	21.1
braccio	12	0.4	27.8	2.3	26.1

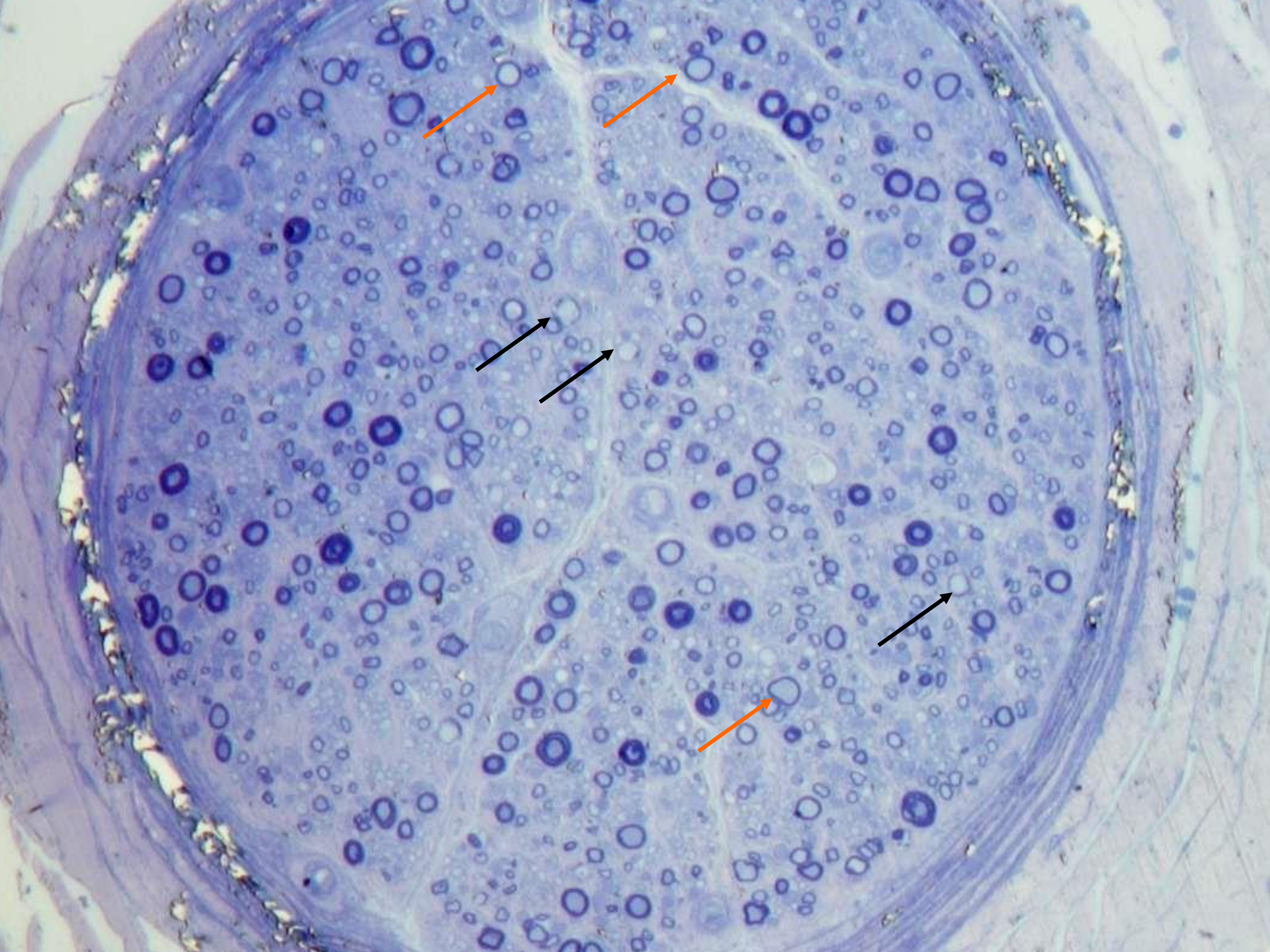
NERVO TIBIALE POSTERIORE DESTRO VCM

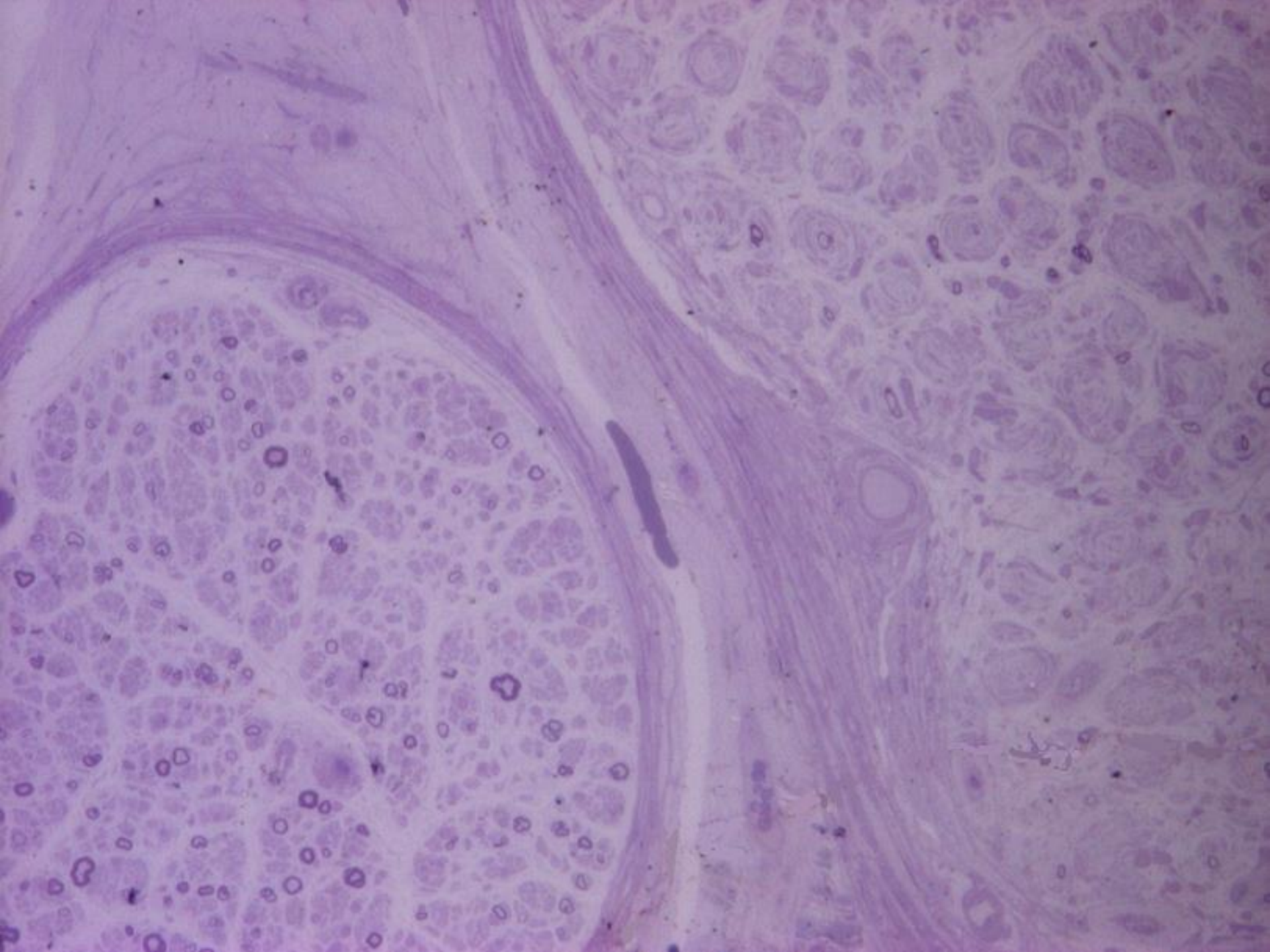


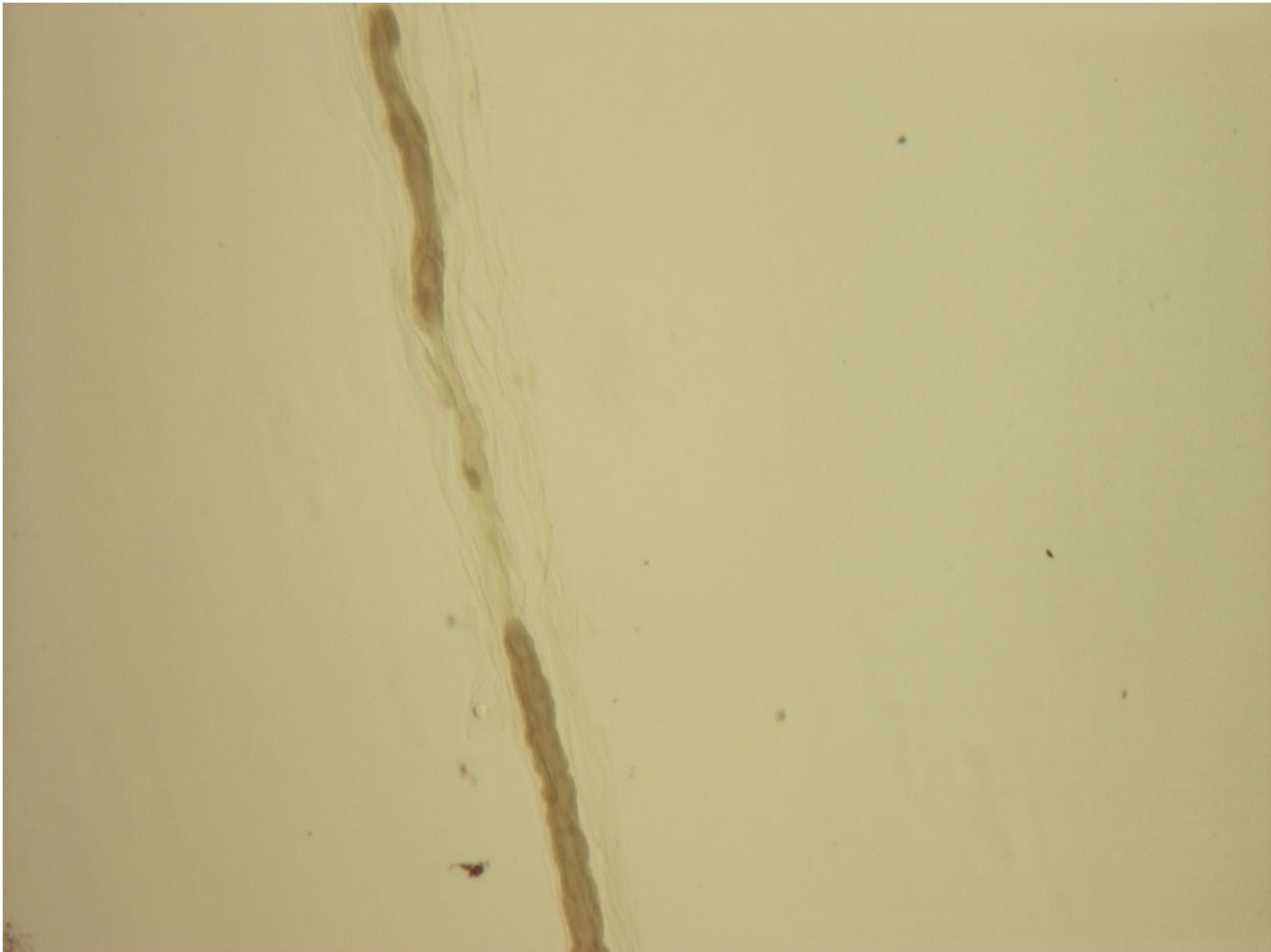
Siti	Lat	Amp	VC	Area	Durata
malleolo	7	3.2	21.1	18.5	27.2
poplite	25.7	0.9		8.5	56.5

Polineuropatia Infiammatoria Demyelinizzante Cronica (CIDP)







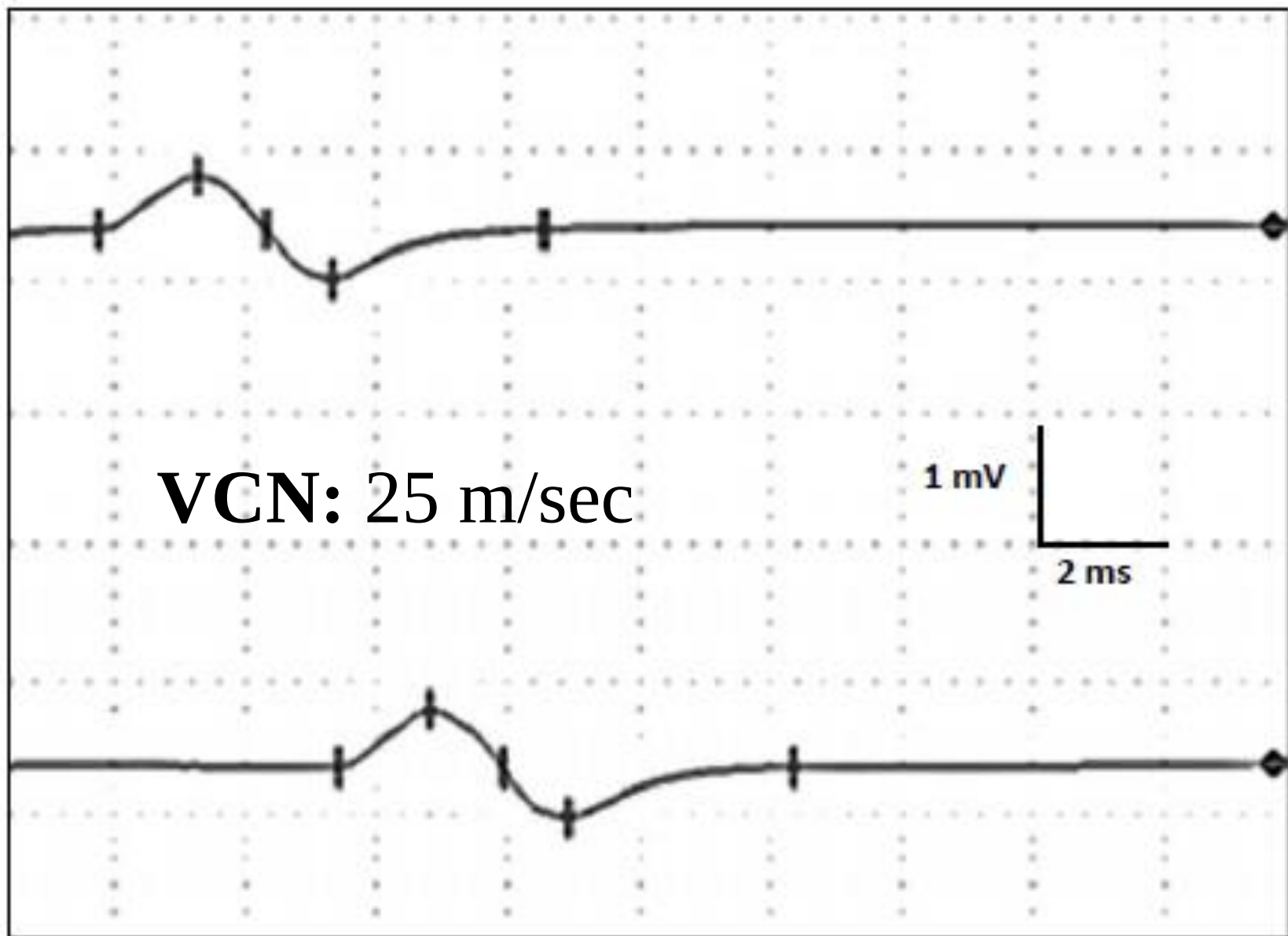


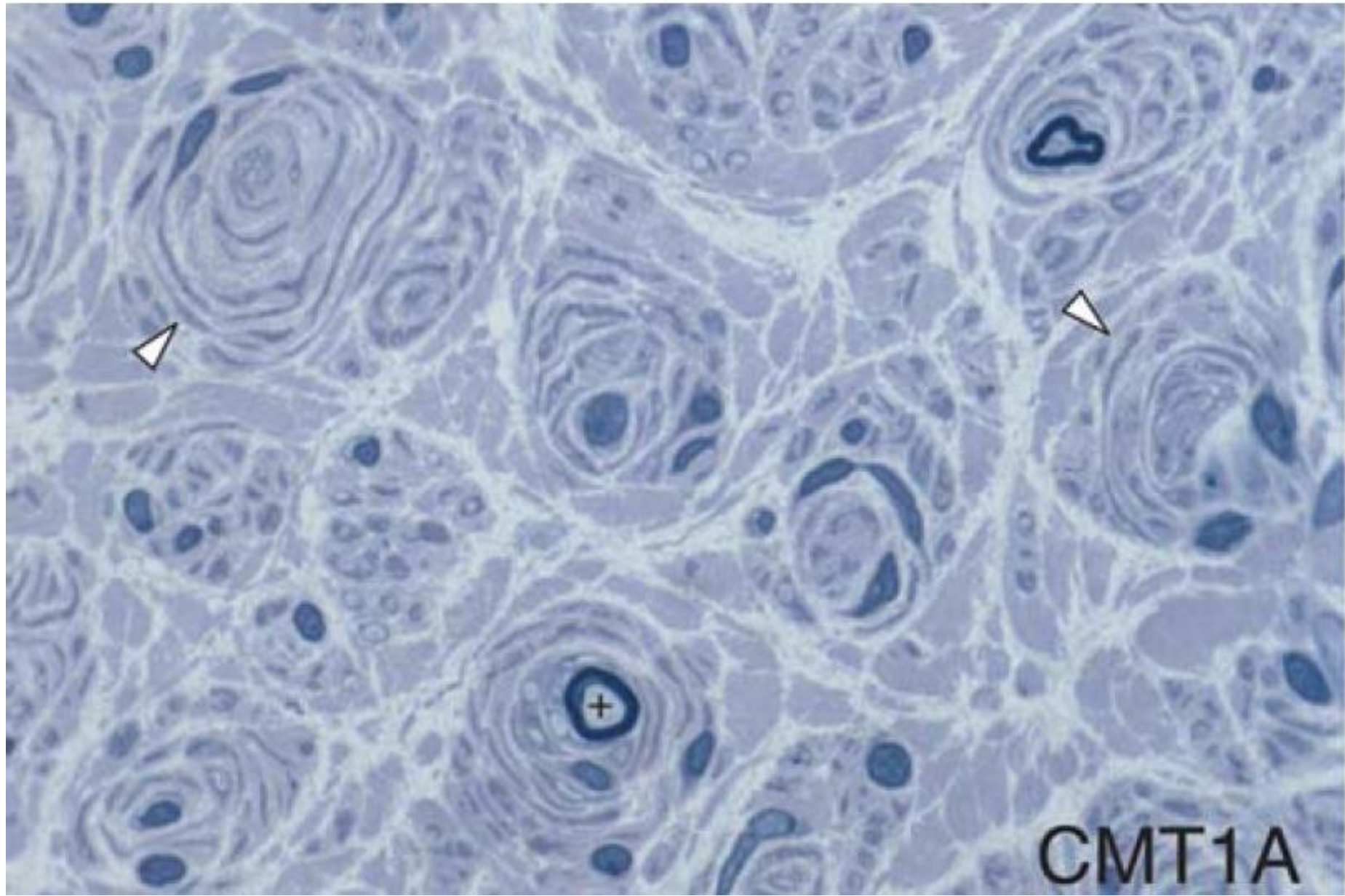
Criteri elettrofisiologici per la definizione di una modificazione primaria della mielina

1. Aumentata latenza distale motoria
2. Ridotta velocità di conduzione
3. B.C. parziali /Dispersione temporale.
4. Assenza/prolungamento onde F.

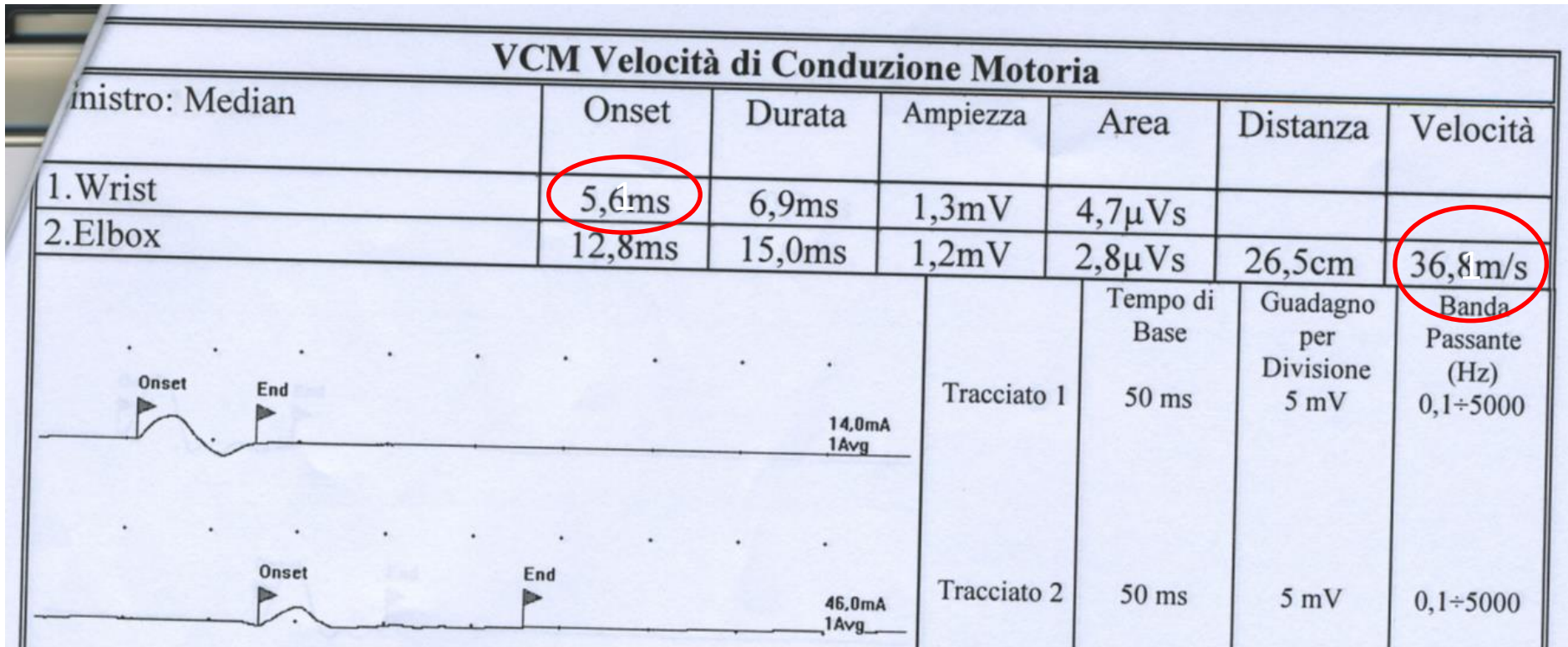
Polineuropatie demielinizzanti (genetiche?)

Pattern di rallentamento
sincronizzato: uniforme
rallentamento della conduzione
motoria e sensitiva in assenza di
dispersione temporale





Polineuropatia Demielinizzante da anticorpi anti-MAG

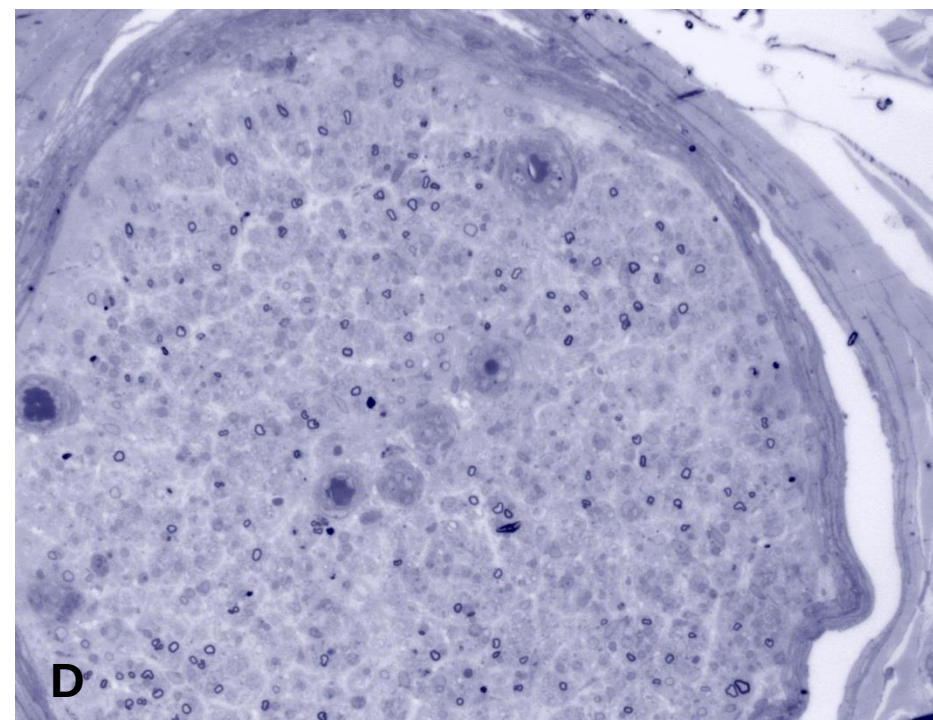
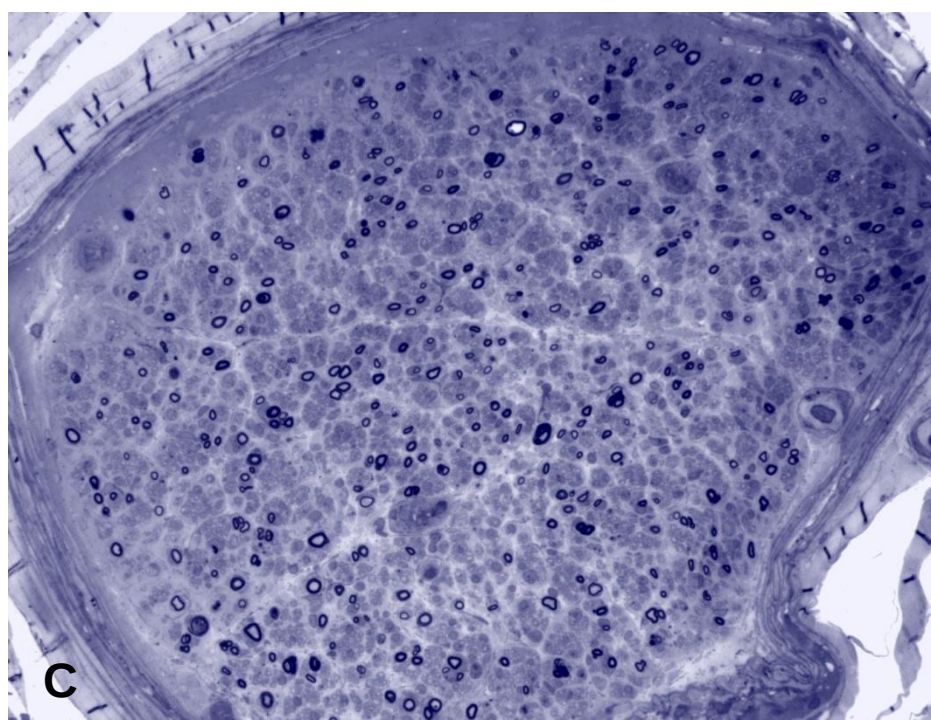
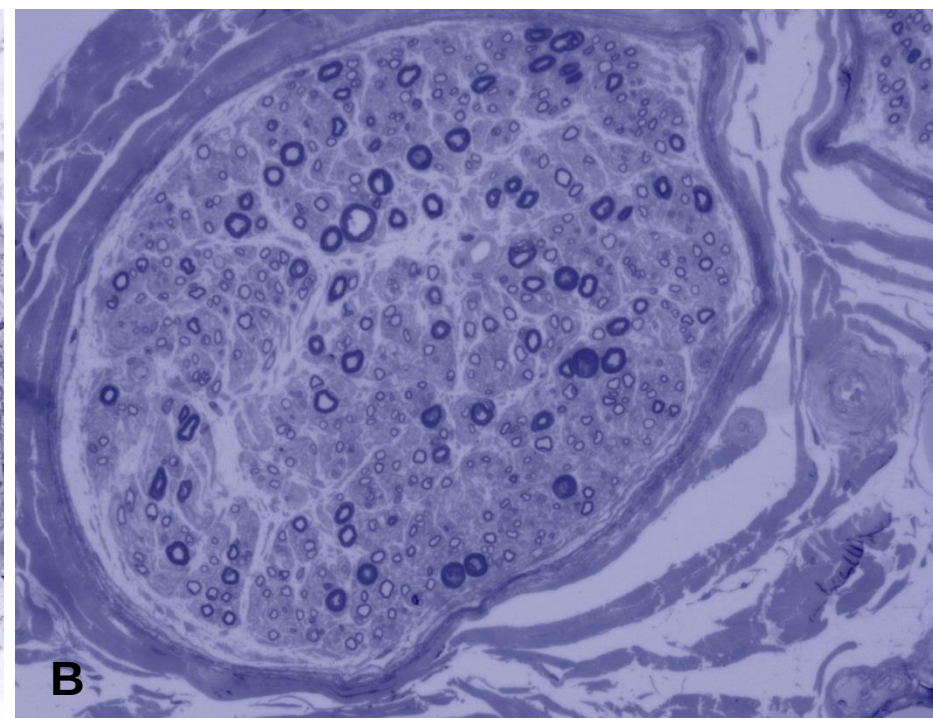
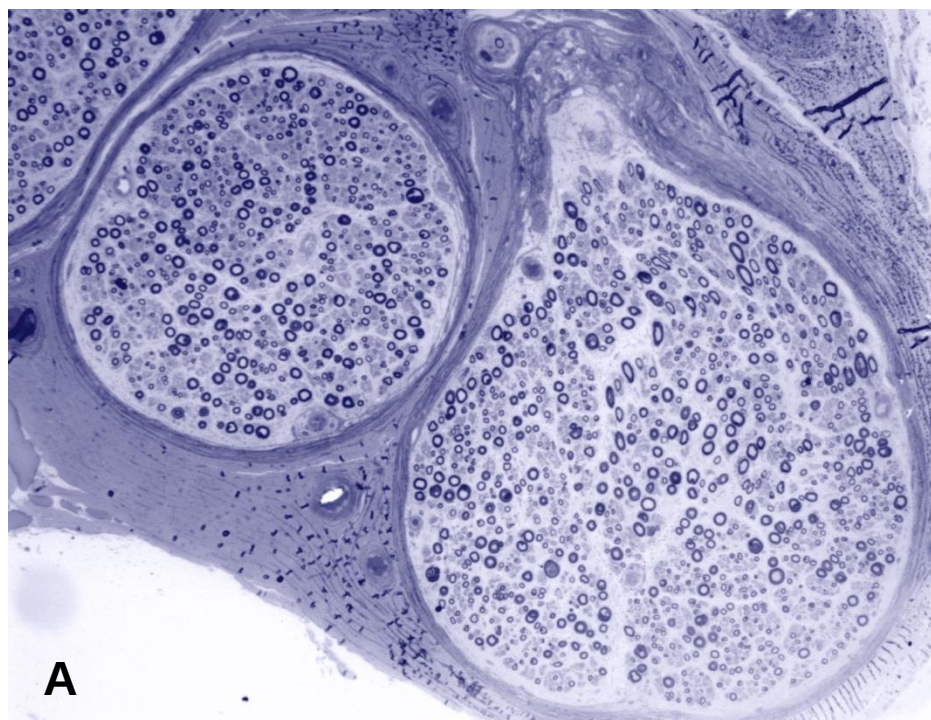


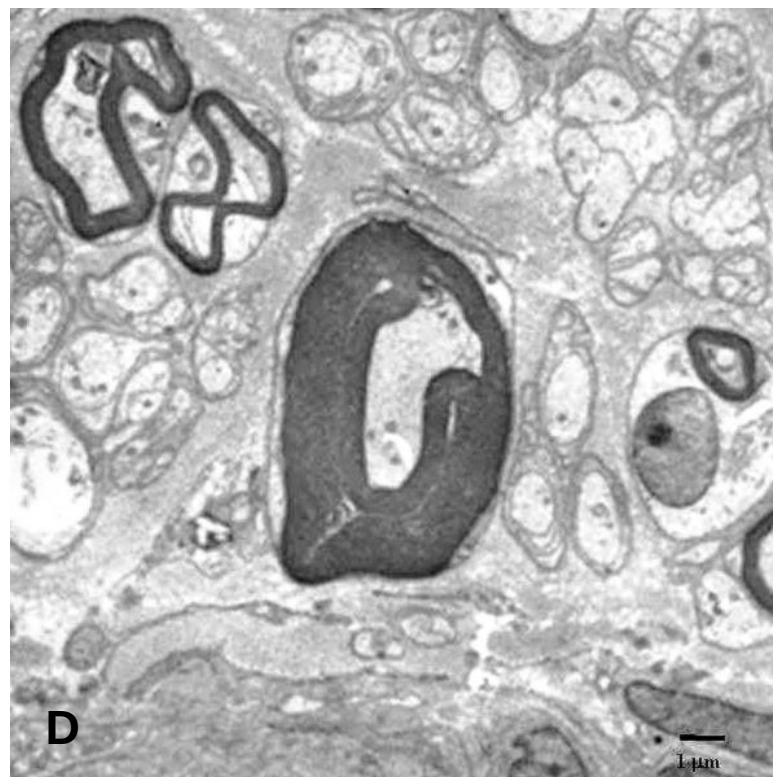
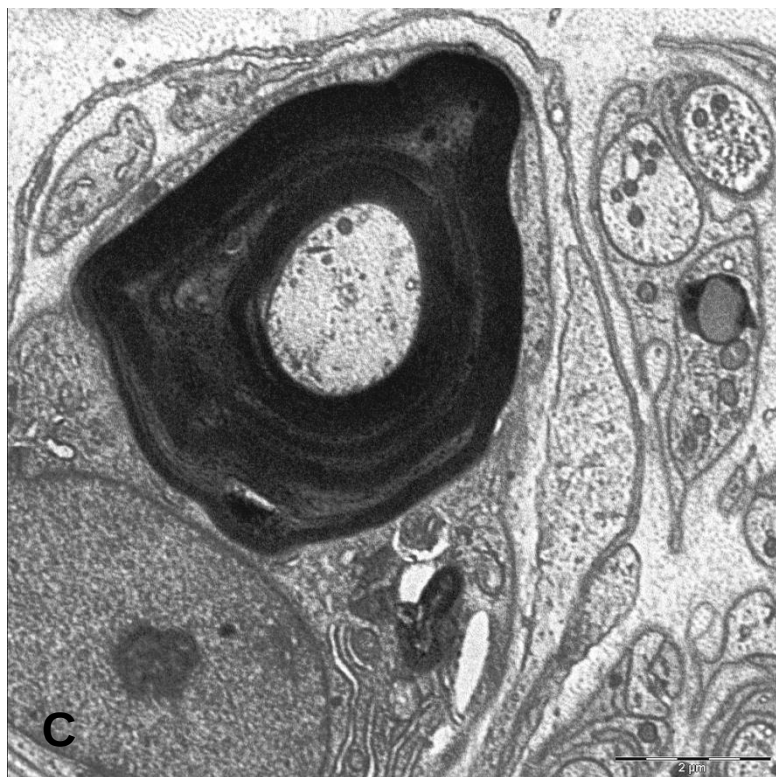
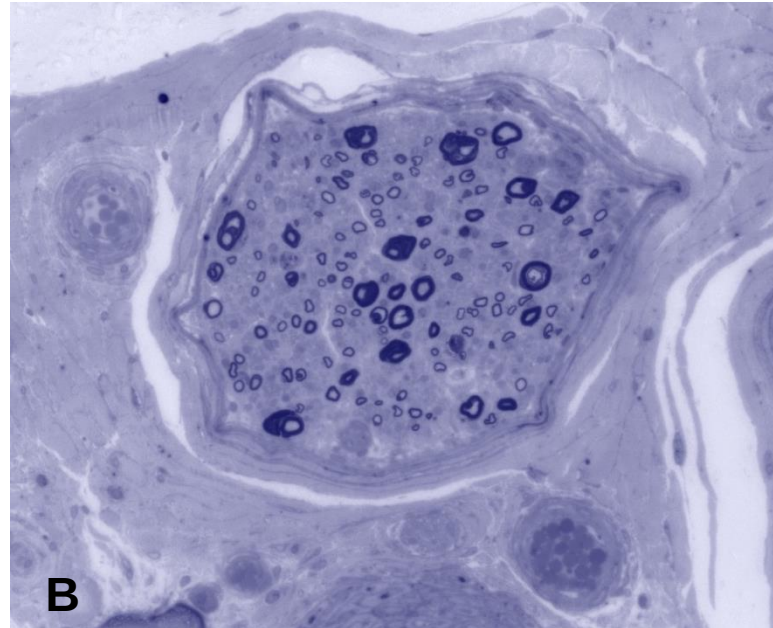
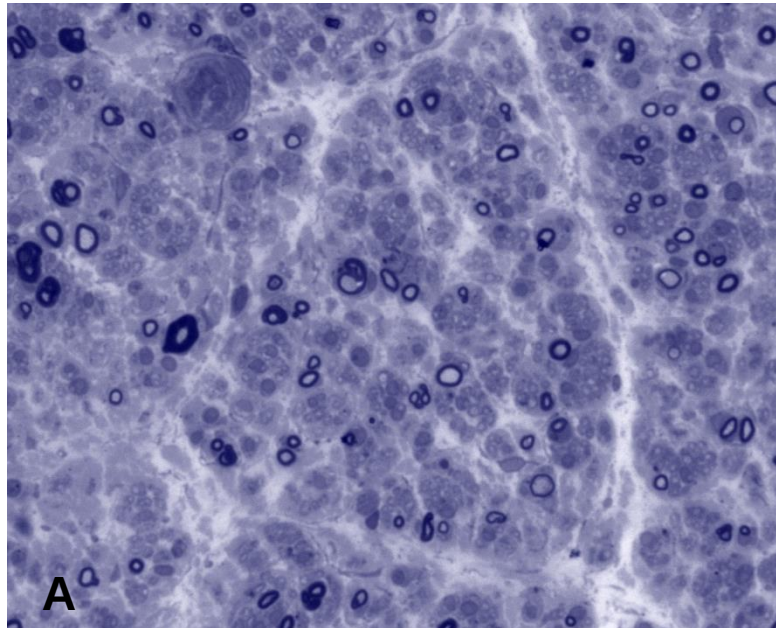
Morfologia conservata; ampiezza conservata; durata conservata; no blocco di conduzione

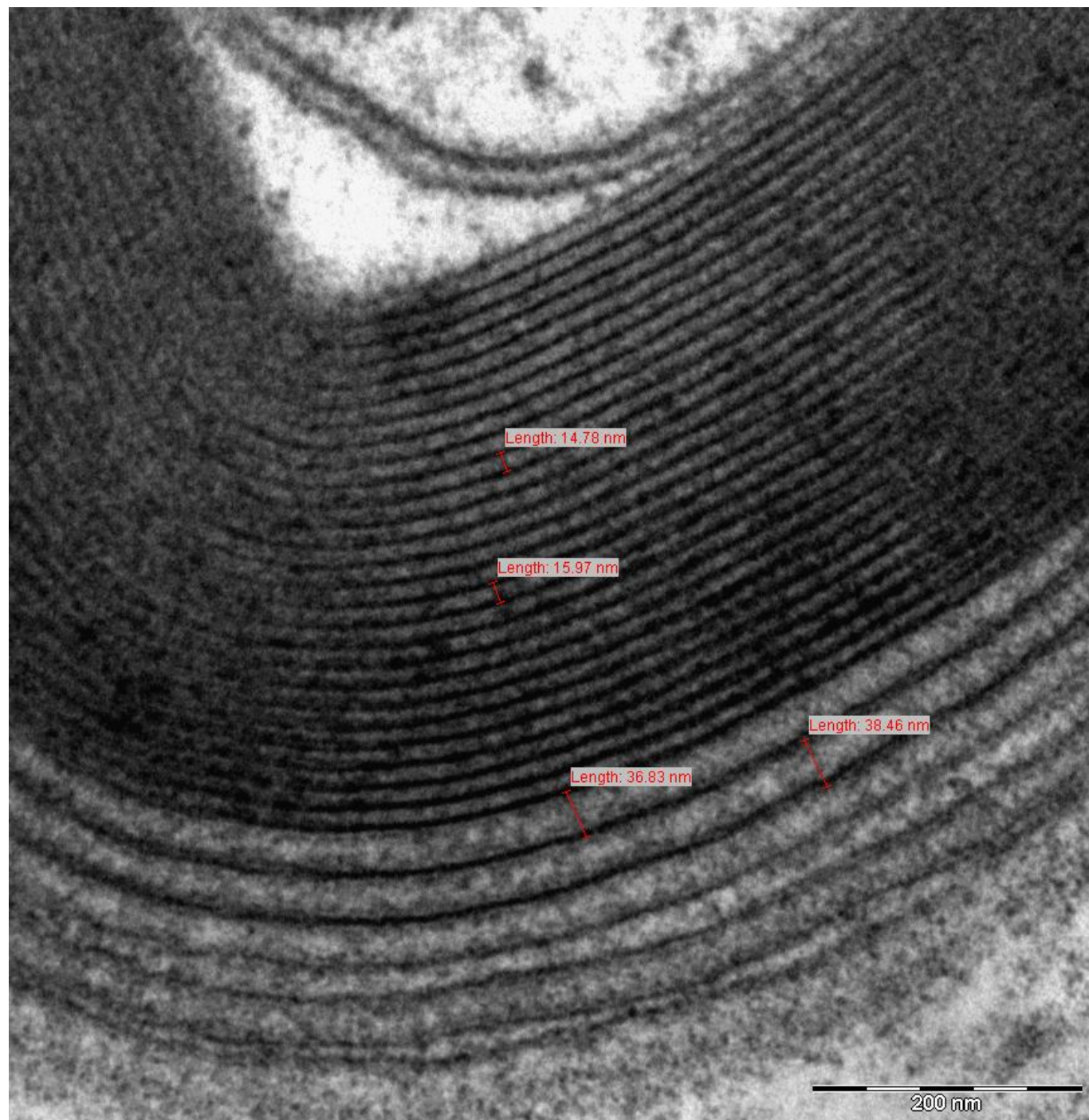
Table 4. Electrophysiological features associated with IgM PDN.

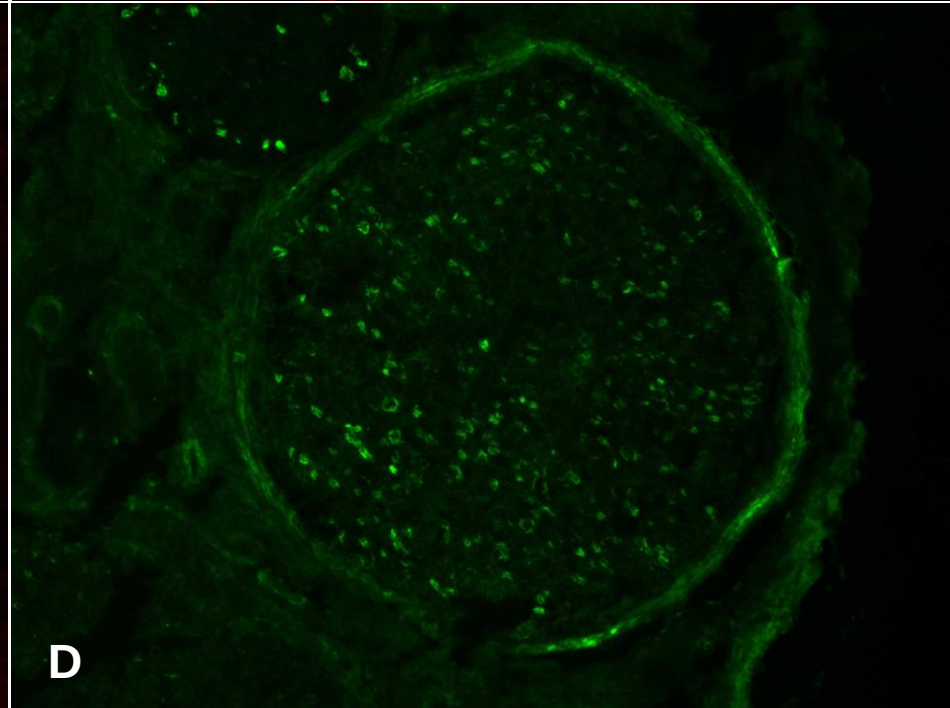
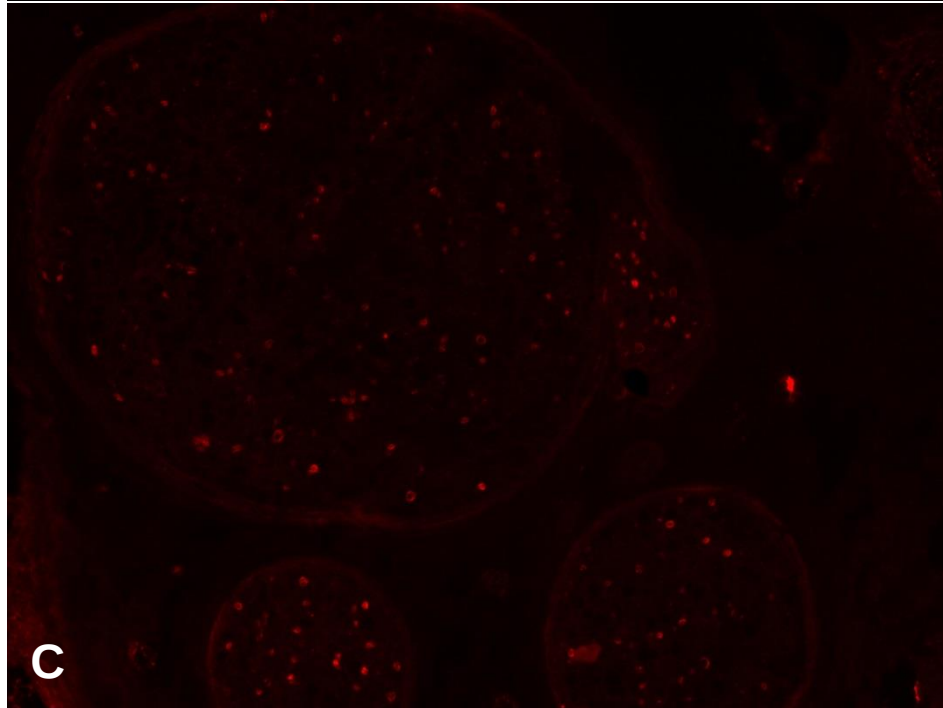
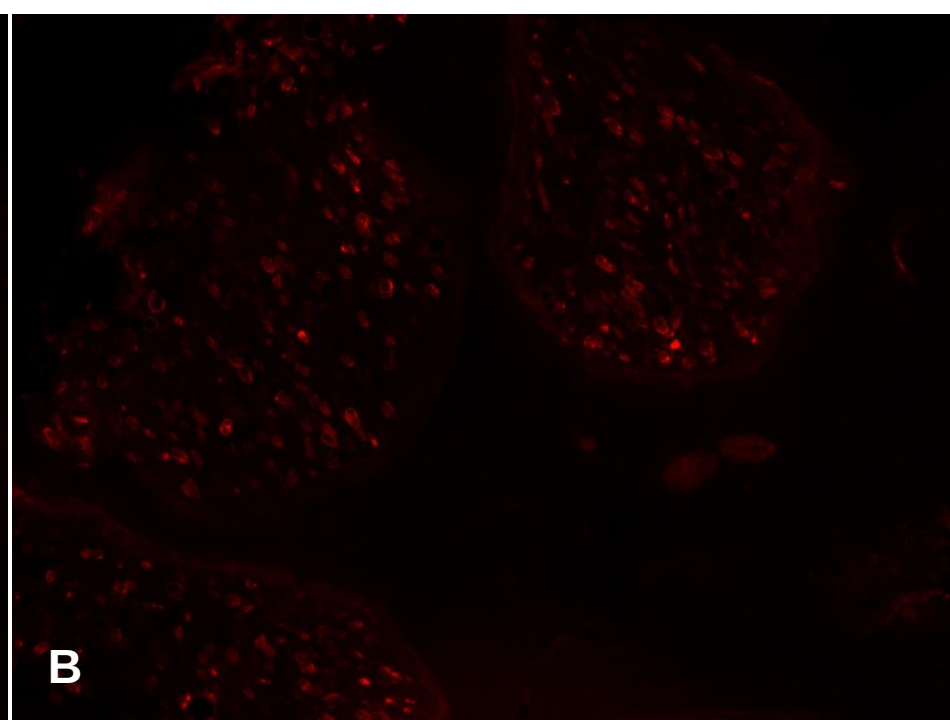
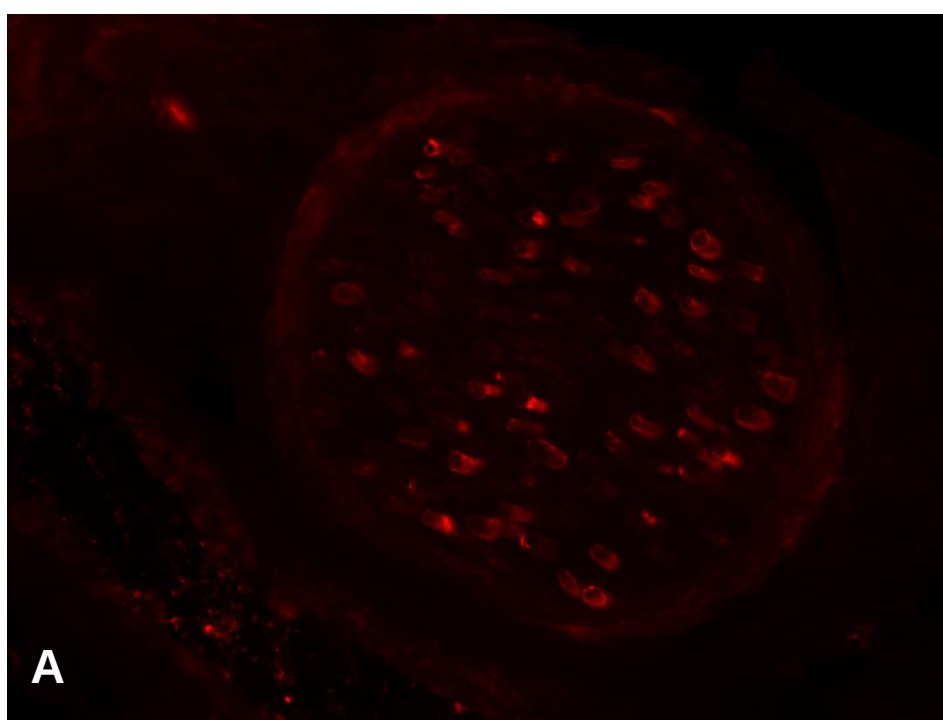
1. Uniform symmetrical reduction of conduction velocities; more severe sensory than motor involvement
 2. Disproportionately prolonged DML. This may be quantified as terminal latency index (defined as distal distance/[motor conduction velocity $\times$ DML]; i.e., 'distal velocity'/'intermediate segment velocity') ≤ 0.25
 3. Absent sural potential (i.e., less likely to have the 'abnormal median, normal sural' sensory action potential pattern)
 4. Partial motor conduction block (i.e., proximal/distal CMAP amplitude ratio < 0.5) and marked distal CMAP dispersion are very rare
-

CMAP, compound muscle action potential; DML, distal motor latency; PDN, paraproteinemic demyelinating neuropathy.





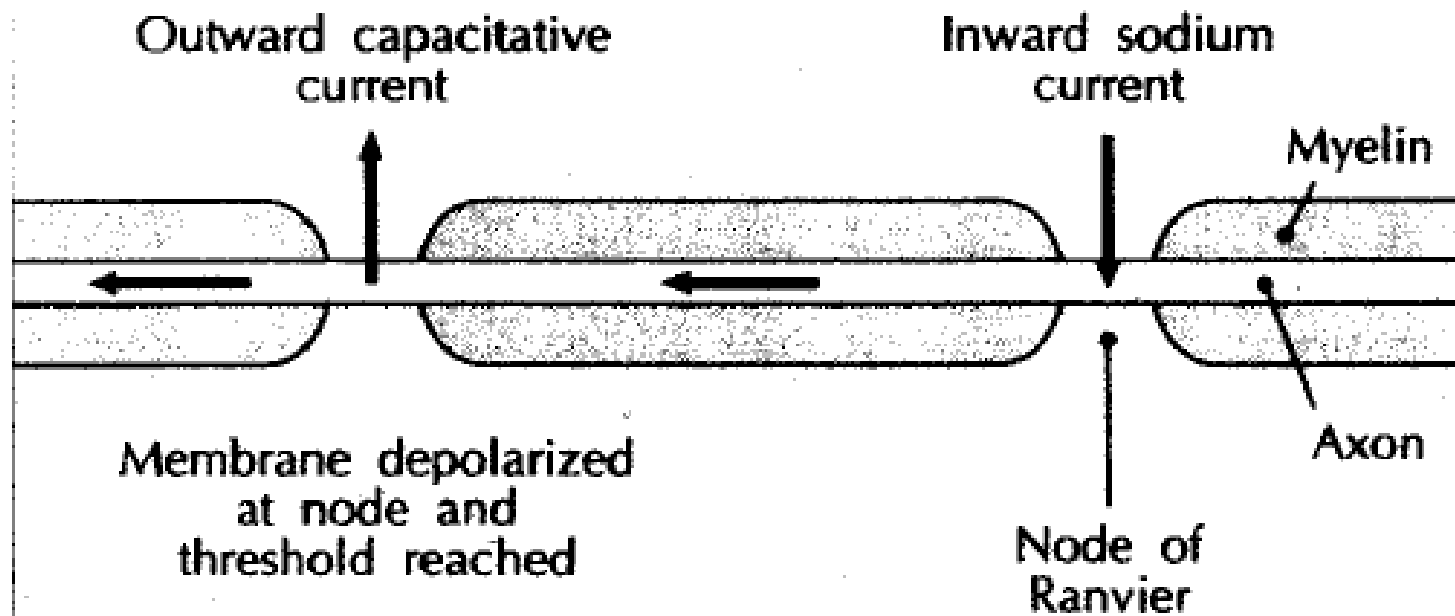




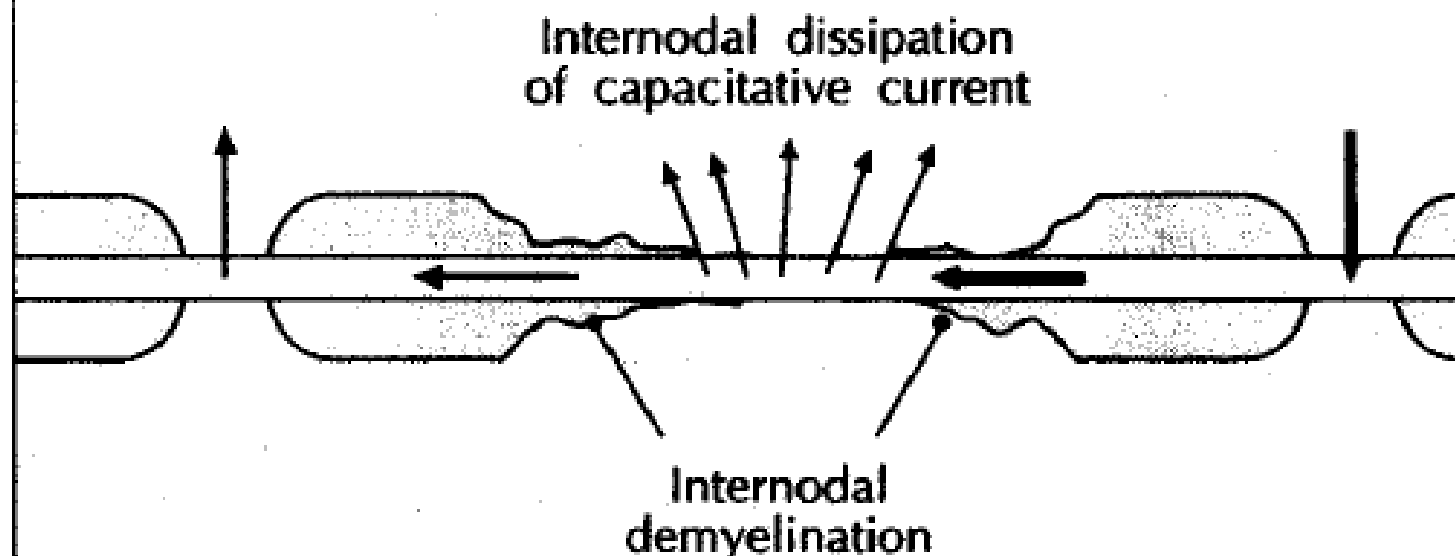
Polineuropatie demielinizzanti (malattie dei canali?)

Pattern di blocco della conduzione:
conduzione motoria e sensitiva
normale nei segmenti convenzionali
con blocchi di conduzione
esclusivamente motori, senza
dispersione temporale

(a)



(b)



Blocco di conduzione (meccanismi patogenetici)

Causa

Esempio

Demielinizzazione,

S. di G.B., CIDP,
MMN?, S.M., entrapments

Blocco canali Na,

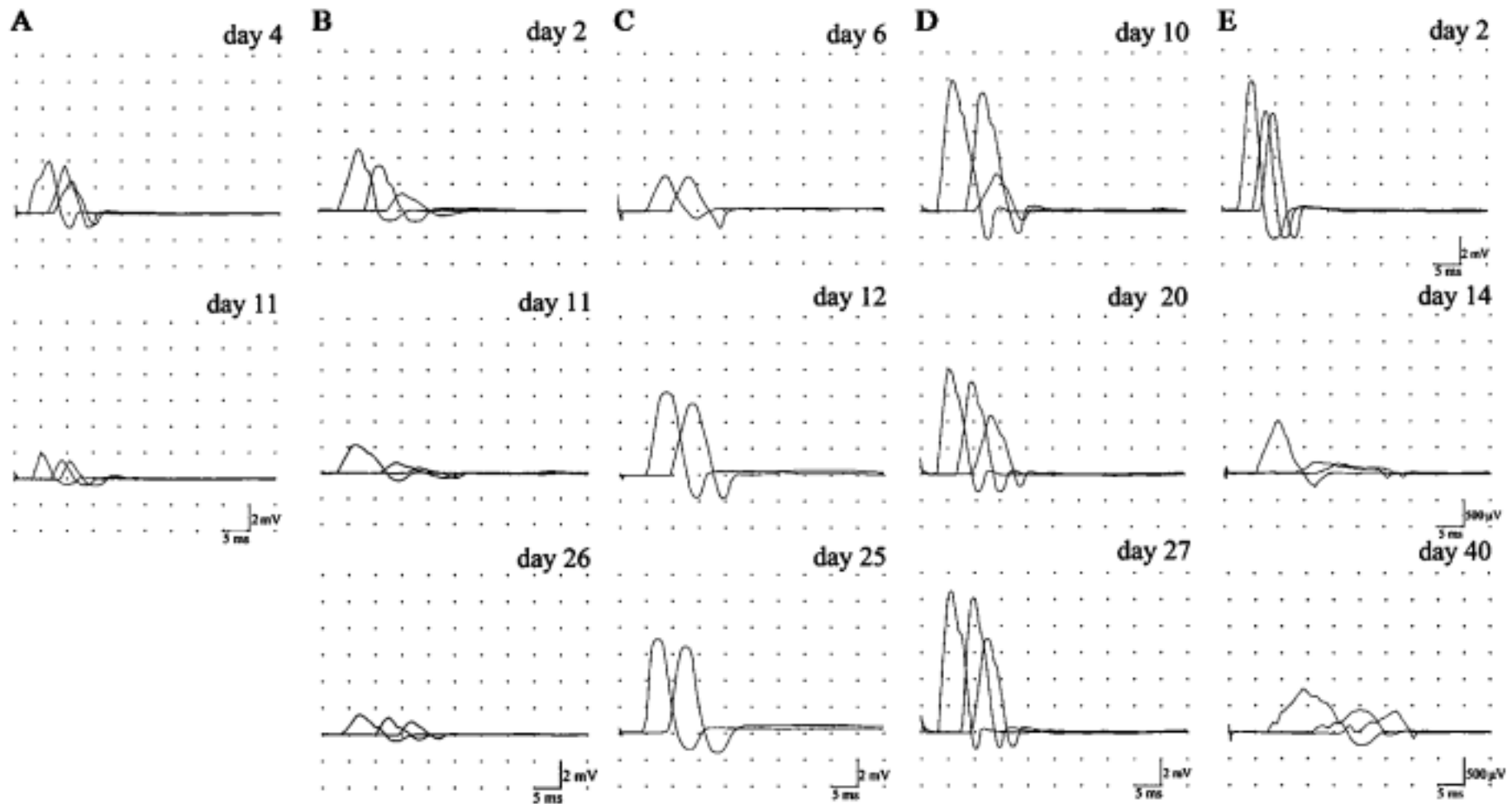
Anestetici locali,
tetradotossina, Ab-GM1, AMCBN?

Iperpolarizzazione

Treni alta frequenza
(favorito da demielinizzazione.)

Depolarizzazione,
danno barriera > K extra-cellulare

Ischemia, MMN?



Reversible conduction failure pattern in intermediate nerve segments (D).

Ulnar nerve. On day 10, there was a partial CB across the elbow which improved on day 20 and resolved at day 27 without the development of excessive temporal dispersion. The patient had IgG anti-GM1, anti-GD1a and anti-GD1b.

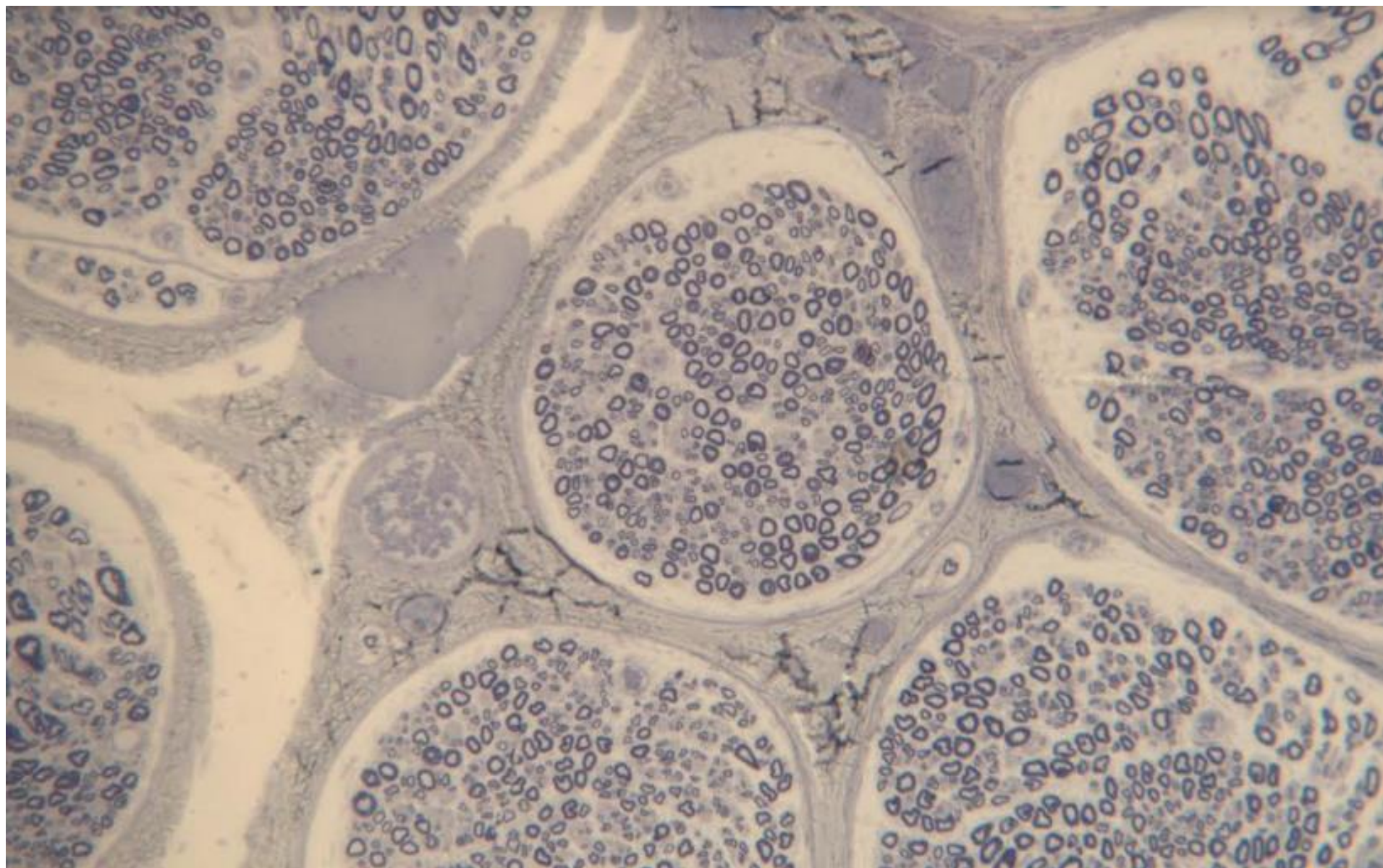
Antibodies to neurofascin, contactin-1, and contactin-associated protein 1 in CIDP

Clinical relevance of IgG isotype

Andrea Cortese, MD, PhD, Raffaella Lombardi, MA, Chiara Briani, MD, Ilaria Callegari, MD, Luana Benedetti, MD, PhD, Fiore Manganelli, MD, Marco Luigetti, MD, PhD, Sergio Ferrari, MD, Angelo M. Clerici, MD, Girolama Alessandra Marfia, MD, Andrea Rigamonti, MD, Marinella Carpo, MD, PhD, Raffaella Fazio, MD, Massimo Corbo, MD, Anna Mazzeo, MD, Fabio Giannini, MD, Giuseppe Cosentino, MD, PhD, Elisabetta Zardini, MA, Riccardo Currò, MD, Matteo Gastaldi, MD, PhD, Elisa Vegezzi, MD, Enrico Alfonsi, MD, Angela Berardinelli, MD, Ludivine Kouton, MD, Constance Manso, MSc, Claudia Giannotta, MA, Pietro Doneddu, MD, Patrizia Dacci, MD, PhD, Laura Piccolo, MD, Marta Ruiz, MD, Alessandro Salvalaggio, MD, Chiara De Michelis, MD, Emanuele Spina, MD, Antonietta Topa, MD, Giulia Bisogni, MD, Angela Romano, MD, Sara Mariotto, MD, Giorgia Mataluni, MD, PhD, Federica Cerri, MD, PhD, Claudia Stancanelli, MD, Mario Sabatelli, MD, Angelo Schenone, MD, Enrico Marchioni, MD, Giuseppe Lauria, MD, Eduardo Nobile-Orazio, MD, Jérôme Devaux, PhD,* and Diego Franciotta, MD*

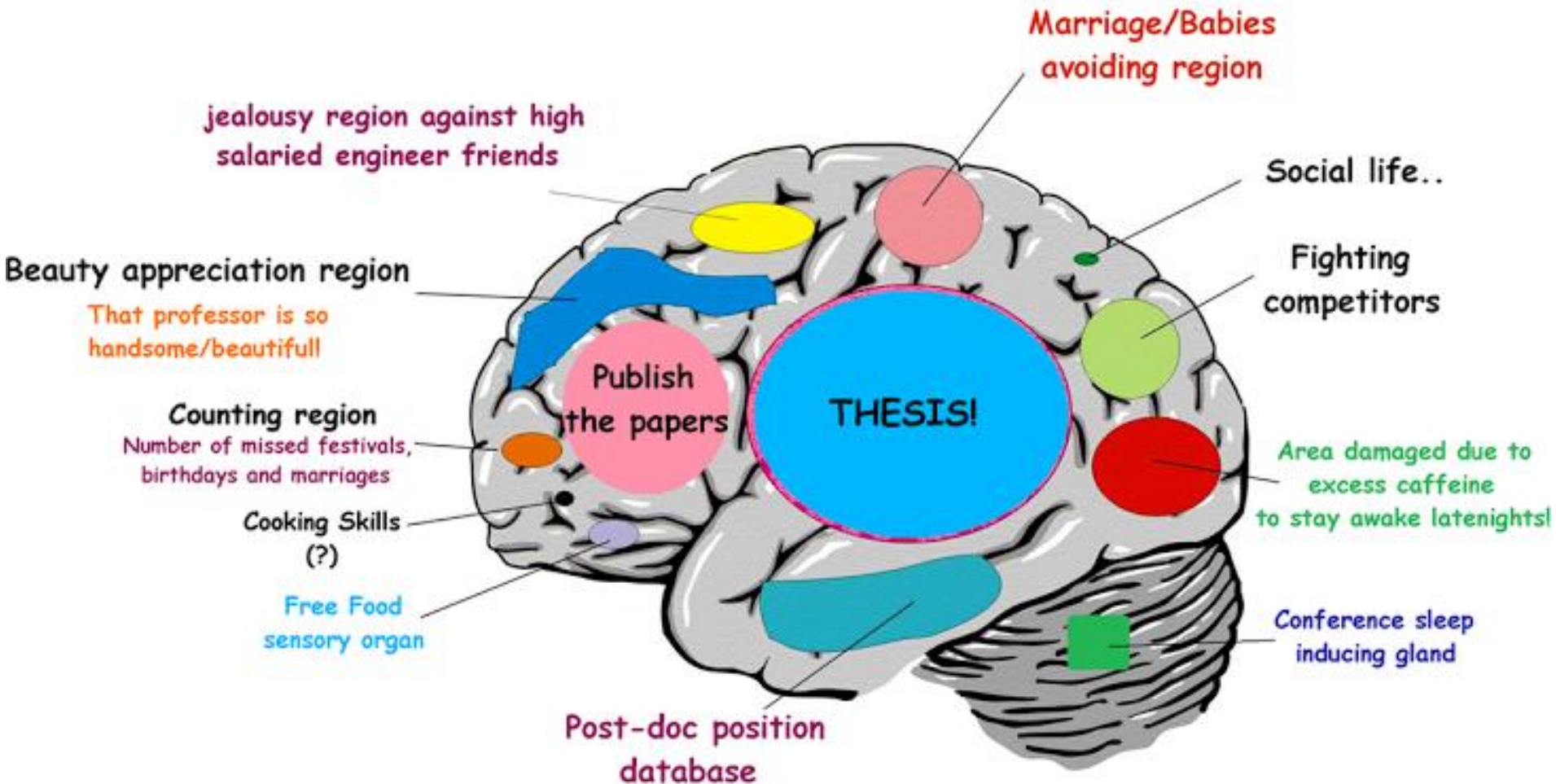
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"Typical PhD brain"

Magnified 100x than original size!



GRAZIE PER L'ATTENZIONE!!!!



Vishal Kalel
<http://phdhumor.blogspot.com>