Erik's EMG Quiz

In routine EMG we usually ask the patient to perform a strong contraction, and the EMG pattern is analyzed.
Give a few words of argument why each of these TERMS are less than optimal

Interference pattern
Summation pattern
Pattern at strong contraction
Recruitment pattern

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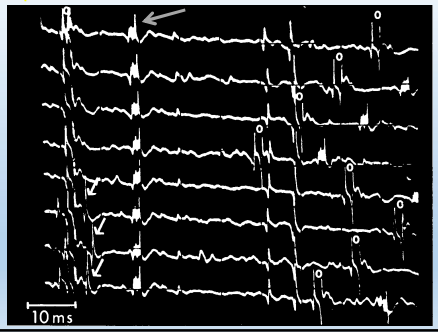
Interference pattern	50,60Hz
Summation pattern	not much summation, equally much subtraction
Pattern at strong contraction	neutral but complicated term
Recruitment pattern	leads thoughts to the way MU are orderly recruited

Can a MUP have a longer total duration than the interval between discharges of this MUP

Split muscle fibers



Is it possible to decide whether a recorded EMG signal originates in the nerve or in the muscle

Is there any difference in MUP parameters if the recording is obtained 2 cm or 5 cm from the end-plate?

We sometimes record double discharges (extra discharges) in voluntary EMG. Do we require that the two discharges are identical in shape, to separate them from occasional occurrence of discharges from 2 different MUPs

Critical illness: are fibrillations usually a sign of neuropathy (CIP)

Critical illness: is the myosin content lower in CIM than in CIP

Critical illness: is sural amplitude different in CIM and CIP

Can an A-wave appear after the F-waves

Is there any difference in amplitudes between A-waves and individual F-responses

Can you detect the "size principle" with conventional needle electrodes?

Concentric electrode has an oval recording surface: are the MUP parameters different for transversal or longitudinal insertion of the electrode (in relation to the fiber direction).

Is it possible to make sure that you are stimulating muscle fibers directly and not intramuscular nerves in so called direct muscle stimulation (critical illness tests)

In concentric needle electrode recordings, one can sometimes obtain low amplitude MUP that looks "upside down". Explanation?

53 Neurography: Root or plexus

Patient 80 yo, with right-sided weakness and numbness in the leg.
Low sensory amplitude in right fibularis superficialis but normal on the left side.
Reduced CMAP ampl in right EDB
EMG in Tib ant show denervation. EMG in lumbar paraspinals normal

1. L5 root
2. **plexopathy**
3. central lesion
4. polyneuropathy

Normal sensory and paraspinal EMG favors plexus lesion

Fib and pws

Factors about these signals

1. generated in the axon
2. generated in individual muscle fibers
3. usually appear with irregular firing rhythm
4. always sign of axonal pathology
5. PSW more significant in the EDX interpretation

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EDX in demyelinating neuropathy with conduction block

Which alternative is expected EDX finding in these conditions

1. Reduced MUP amplitudes
2. Reduced CMAP amplitudes
3. Reduced fullness of interference pattern at strong contractions
4. Interference pattern at strong contraction most pronounced proximally
5. Abundant fibs in distal muscles

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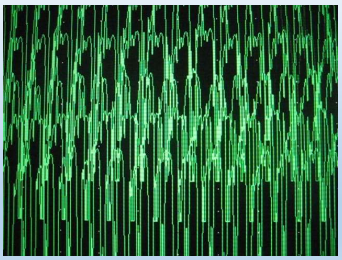
What do you call this phenomenon?

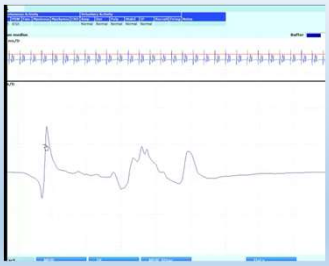


What do you call this phenomenon?

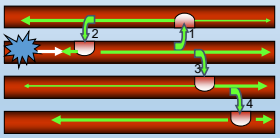
This is CRD, complex repetitive discharges, not myotonia

Abrupt start and stop.
No waxing and waning

Mechanism



CRD (M gluteus) Abrupt start and stop, complex. No jitter between components



58 EMG: acute weakness

Patients with acute weakness since 2 days.
If this is GBS, which combination of findings do we get

1. normal CMAP and CV – normal MUPs and firing
2. normal CMAP , reduced CV – early reinnervation
3. Reduced CMAP ampl - first signs of denervation
4. normal CMAP, normal CV, recured # F waves, presence of A waves
   - abnormal interference pattern

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   - reduced interference pattern

CMAP and CV changes and denervation signs have not yes developed.
Weakness is due to conduction block; thus reduced F persistence and reduced EMG pattern at effort

54 EMG: Myasthenia?

Patient with ptosis but no arm or leg weakness. RNS in nasalis and deltoid normal.
SFEMG in orb oculi shows jitter and some blocking. Jitter abnormal in Ext dig.

1. Ocular MG
2. Generalized MG
3. Myopathy
4. Miller Fisher syndrome

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MG classification is conventionally on clinical grounds.
Jitter is abnormal in ED in 60% of cases with Ocular MG

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Normal SFEMG findings are strong indications that symptoms are NOT MG. In this case, it may be a myopathy, often with very little of jitter abnormalities

59 Methods of choice

Which is the EDX method of choice for the following diagnostic questions

MG	RNS **SFEMG**
CTS	EMG of APB and ADM **antidromic sensory neurography**
GBS	EMG **neurography** thermotest
Root	**EMG** neurography evoked potentials
ALS	**EMG** neurography Motor unit counting

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