1. 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 descriptions are less than optimal.
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

2. Can a MUP have a longer total duration than the interval between discharges of this MUP?
Yes

3. Is it possible to decide whether a recorded EMG signal originates in the nerve or in the muscle?
From muscle = single fibre action potentials. From nerve = MUPs

4. Is there any difference in MUP parameters if the recording is obtained 2 cm or 10 cm from the end-plate.
More dispersion at the end-plate (duration, complexity) [1]

5. We sometimes record double discharges (extra discharges) in voluntary EMG. Do we require that the two discharges are identical in shape (amplitude, duration, phases), as a mean to separate them from occasional occurrence of discharges from 2 different MUPs?
Due to rel refractory period the second discharge is lower in amplitude (interval dependent). The succeeding ordinary discharge is often missing [2]

6. Critical illness: are fibrillations usually a sign of neuropathy (CIP)?
No, seen both in CIM and CIP

7. Critical illness: is the myosin content lower in CIM than in CIP?
Yes

8. Critical illness: is sural amplitude different in CIM and CIP?
In principle normal in myopathy, but abnormal in CIP

9. May an A-wave appear after the F-waves?
Yes, since the A-wave is generated in an abnormal axon

10. Can we have an A-wave and an F-response in the same axon at a given stimulus (SFEMG necessary to identify that we record from the same axon)?
No
11. Is there any difference in amplitudes between A-waves and individual F-responses
No, very similar, but the low ampl A-waves are much easier to see than the low ampl F-waves.

12. Monopolar recording. Is there any difference in the pattern at strong voluntary contraction if the distance between the two recording monopolar electrodes (“active” and “reference”) is 1 cm or 10 cm
With 1 cm or smaller the electrodes record to some extent from the same MUPs, and common activity is subtracted. With separate electrodes, you will bet a sum of activity in the two.

13. Can you detect the “size principle” with conventional needle electrodes?
No, the uptake are of mono/con electrodes is about 2 mm and the MUP often 5-10 mm in diameter, so you do not know if you are recording from a small or large MU. [3]

14. 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).
Yes, but this is never taken into account. Ref values are obtained with any electrode rotation.

15. Which is the concentric needle electrode recording uptake radius (180 or 360 degree) for the duration parameter in a MUP?
Which is the concentric needle electrode recording uptake radius (180 or 360 degree) for the spiky part of the MUP?
For Duration: about 2 mm, spherical. For Spiky part, about 0.5 mm, hemispherical[4, 5]

16. 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),
Yes, by measuring the jitter. < 5usec if direct stimulation [6]

17. You may stimulate one or very few axons at two different sites (prox and dist) and record a SFEMG response from corresponding muscle and so measure the conduction in a single axon. How do you ascertain that you have stimulated exactly the same axon?
Stimulate distally and proximally simultaneously. If you stimulate the same axon, no response will be seen from the proximal stimulation site.

18. SFEMG: how many spikes do you need to record simultaneously to detect neurogenic blocking
3

19. SFEMG: how many spikes do you need to record simultaneously to detect neurogenic jitter
4 (if you have only 3, the jitter may be in the nm-j of the triggering)
20.
Reinnervation. In the early stage of reinnervation (20 days) after a partial nerve lesion, you start to see MUPs with some jittering spikes. In general is the MUP “small” or “large”?
Collateral reinnervation takes place from a normal MU, so the reinnervated MU should be larger. We get small MUs, “nascent” MUPs only after complete nerve lesion.

21.
In monopolar EMG recording you often see a small positive going signal on the slow slope of the signal, before it ends. What is this, and why do you not see that in concentric needle EMG
This is a signal probably generated as a far field signal when the depolarization reaches the tendon. Since it is a far field potential it is recorded equally well with the tip as with the cannula in the concentric electrode and therefore cancelled. [7]

22.
With increasing force, the EMG amplitude (envelope amplitude) increases. Why?
It is not the “size principle”, but a statistical phenomenon, with increasing chance of recording from the closest muscle fibers, with increasing force level. Your first recorded fibers may be a few hundred um away.

Reference List