Sept 2009
QUESTION 03

Describe the factors that influence the speed of ONSET of neuromuscular blockade.

Drug Factors

Dose: Higher dose (eg. multiples of ED95) = faster onset.
Plasma clearance: Postulated that drugs with faster clearance (eg. sux) have faster onset.
Potency: Inverse log relationship between potency and speed of onset (non-depolarisers).
Low potency = bigger dose needed (more molecules), so higher conc gradient between plasma and site of action = more rapid onset.
Depolarisers vs non-depolarisers.

Patient Factors

Rate of injection: faster rate = faster onset.
Site of injection: Central vein (more rapid distribution)> peripheral vein > IM
Cardiac output and muscle blood flow: Higher CO and muslce blood flow = faster delivery to site of action.
Priming: small dose of non-depolariser as a premed can partially block NMJ, followed by intubating dose. This decreases time from intubating dose to intubation conditions.
Disease states: eg. myaesthenia gravis (fewer ACh receptors, so needs more sux, but about 10% dose of non-depolariser).

Other factors

Muscle group: Fastest affected = small, rapidly moving muscle groups (eye, digits), with trunk/abdo muscles last affected.
Recovery is in reverse order: diaphragm/intercostals recover first.
Onset more rapid in muscle groups relevant to intubation: laryngeal, masseters. Slower in monitored muscles (eg.adductor pollicus).
Probably due to muscle blood flow.
Samller volume of distribution due to blood loss can augment potency ie: speed of onset(Stoelting)

Drugs: eg. ephedrine can increase speed of rocuronium onset. Inhalationals/aminoglycosides.