Muscle relaxation and artificial ventilation

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Pharmacological blockade of neuromuscular transmission by neuromuscular blocking agents provides relaxation of muscles, allowing easy surgical access. However, the patient will need artificial ventilation. Neuromuscular blocking agents are broadly classified into depolarising and non-depolarising groups according to their mode of action (Table 23.1). Suxamethonium is the most commonly used depolarising agent. It binds to the nicotinic acetylcholine receptors, result - ing in opening of the cation channel, leading to depolarisation and rapid relaxation of muscles. Despite its adv erse e ff ects such as hyperkalaemia, muscle pain, anaphylaxis and potentially life-threatening malignant hyperthermia, suxamethonium is still widely used because of its quick onset and short duration of action. These properties are useful when rapid endotracheal intubation is necessary to protect the patient’s airway or when short duration surgery is performed. Non-depolarising muscle relaxants act by competitive blockade of postsynaptic receptors at the neuromuscular junction. They provide longer, pr edictable activity but require careful monitoring, appropriate timing and reversal of their action by agents such as neostigmine and sugammadex at the end of the procedure. A peripheral nerve stimulator is rou - tinely used to monitor the depth of neuromuscular block and also to confirm satisfactory recovery of muscle power prior to te the extubation. With the incr easing availability and evidence of the use of sugammadex, the non-depolarising muscle relax - ant rocuronium is an alternative to suxamethonium in the ‘rapid-sequence’ induction as it allows reversal of its actions with sugammadex in a rapid manner. /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF

Advantages Suxamethonium Quickest onset, very short duration, spontaneous recovery Ideal for rapid intubation and for short procedures Vecuronium Long acting Minimal cardiovascular effect and less allergic reaction Atracurium Intermediate acting Non-enzymatic Hofmann degradation Suitable in renal and hepatic failure Rocuronium Rapid onset, intermediate action Suitable for rapid intubation Rapid reversal possible using sugammadex

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