

# RSI Drugs

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# Learning Outcomes

- Know what drugs are used in an “unmodified” RSI
- Understand basic pharmacology of the three broad categories of drugs
  - Hypnotics
  - Analgesics
  - Muscle relaxants

# Triad of Anaesthesia

- Hypnosis
- Analgesia
- Muscle relaxation

# “Unmodified” RSI

- 2 Drugs given in pre-calculated doses
- Thiopental sodium – 2-7mg/kg IV
- Suxamethonium – 1.5-2mg/kg IV
- If intubation fails the patient will recover spontaneously quickest with these drugs

# Hypnosis – Induction drugs

- The “Ideal drug”
  - Induce anaesthesia smoothly and rapidly
  - Minimal depression of respiratory and cardiovascular systems and protect cerebral circulation
  - Rapid recovery and no adverse effects
  - **Doesn't exist!**

# Etomidate

- Indicated for induction of anaesthesia in the haemodynamically compromised patient
  - Dose 0.3 mg/kg IV
- 5 – 15 seconds onset
- Myoclonic movement on injection (may be mistaken for seizures)
- Pain on injection
- Adrenocortical suppression (even after single dose)

# Propofol

- Most commonly used induction drug in elective anaesthesia
  - Dose 1.5 – 2.5mg/kg IV
- Can be given as infusion for maintenance or sedation
- Slow onset (20 – 40 seconds), rapid return of consciousness
- End point – loss of verbal contact
- Reduced laryngeal reflexes (ideal for LMA) and apnoea
- Hypotension is common, severe bradycardia occasionally

# Thiopental sodium

- Indicated for haemodynamically stable patient with isolated head injury or seizures
  - Dose 2 – 7mg/kg IV
  - Reduced to 1.5 – 2mg/kg IV in unstable patients
- 5 – 15 seconds onset
- End point – loss of eyelash reflex
- Neuro-inhibition – anti-epileptic activity on EEG
- Cerebroprotective – reduces cerebral metabolic oxygen consumption and ICP
- Myocardial depression and central respiratory depression



# Ketamine

- Indicated for burns, severe bronchospasm and in the cardiovascularly compromised patient
  - Dose 1 – 2mg/kg IV or 5mg/kg IM
- 15 – 30 seconds onset when given IV
- No defined “end point”
- Excitatory phenomena
- Profound analgesia, sedation, dissociative state.
- Central sympathetic stimulation – increases HR and BP, relaxes bronchial smooth muscle
- Increased laryngeal reflexes – potential for laryngospasm
- Emergence phenomena – commoner in adults, reduced with midazolam pre-treatment

# Analgesia

- Reduce sympathetic stimulation
- Reduce pressor response to direct laryngoscopy
  - Severe hypertension when viewing larynx
- Reduce dose of induction agent
  - Potential to reduce side effects

# Opioids

- Fentanyl
  - 3 min onset
  - Dose 1 – 3 mcg/kg IV
  - Bradycardia and muscle rigidity
  - Minimal histamine release
- Alfentanil
  - 1 min onset
  - Dose 10 – 20 mcg/kg IV
  - Muscle rigidity, bradycardia and hypotension
  - No histamine release
- Morphine
  - 5 min onset
  - Dose 100 mcg/kg IV
  - Hypotension
  - Significant histamine release

# Muscle relaxation

- Relax the vocal cords (larynx) to allow the passage of a cuffed tube into the trachea
- Two categories
  - Depolarising
  - Non-depolarising

# Depolarising

- Suxamethonium
- Dose 1.5 – 2 mg/kg IV
- 10 – 15 secs fasciculations
- 45 – 60 secs dense paralysis
- 5 – 10 mins duration
- Risks
  - Hyperkalaemia
  - Bradycardia
  - Muscle pain
  - Histamine release
  - Anaphylaxis
  - Malignant Hyperpyrexia
  - Suxamethonium Apnoea

# Non-depolarising

- Various
  - Atracurium, Vecuronium, Rocuronium
- Rocuronium
  - Dose 0.6 – 1.0 mg/kg IV
  - Higher dose gives onset as rapid as Suxamethonium
  - Duration 30 – 60 mins
  - Small risk of anaphylaxis

# Questions



# Summary

- Basic pharmacology of common RSI drugs including:
  - Induction drugs
  - Analgesics
  - Muscle relaxants