

Emergence Delirium

- Initially described in 1960's
- "Dissociated state of consciousness"
- May occur in adults but more common in children of younger than school going age

Features

- Lasts 5-15 minutes but may be longer
- Typically: Irritable, inconsolable, crying, kicking, moaning, writhing, may not recognize carers
- Usually self-limiting but may cause distress, injury, decannulation, wound dehiscence and dressing removal
- Irritability and aggression may last up to 2 days
- Long-term psychological sequelae unknown
- Not the same as "post-operative agitation" which is excessive motor activity, is more common and is associated with pain, discomfort and anxiety

Aetiology

- Not fully understood
- Thought to be linked to halogenated volatiles isoflurane, sevoflurane and desflurane
- Sevo originally thought to be more at fault but Costi et al in 2014 (retrospective review) found iso, des and sevo all to be the same
- Halothane not implicated

- Theory also that rapid wake up causes it but propofol also rapid wake up with lower incidence

Behaviour	Not at all	Just a little	Quite a bit	Very much	Extremely
Makes eye contact with caregiver	4	3	2	1	0
Actions are purposeful	4	3	2	1	0
Aware of surroundings	4	3	2	1	0
Restless	0	1	2	3	4
Inconsolable	0	1	2	3	4

Diagnosis

- Challenging to distinguish from tantrum and pain
- Can use PAED (Paediatric Anaesthesia Emergence Delirium) Scale. Score of 10 or more very diagnostic

Prediction

- Contentious issue
- Intuitively May think that previous experience, pre-op anxiety, child's disposition, length of procedure may affect
- Some studies show no correlation between pre-op anxiety and emergence delirium
- Scoring systems such as the Paediatric Anaesthesia Behaviour (PAB) score have been suggested to be helpful in prediction

Peri-operative drug administration

- Oral midazolam premed does not prevent
- IV 0.03mg/kg midaz did decrease incidence post squint correction surgery

- Fentanyl 2ug/kg or Alfentanil 10ug/kg single dose at induction of short surgery helps greatly
- Remifentanyl infusion decreased incidence by 50% in one study, even for non-painful procedures
- Remi 1ug/kg decreases incidence but with increased PONV
- Propofol shown to have less incidence than Sevo
- Propofol of 1mg/kg at end may be helpful
- Ketamine 0.25mg/kg IV or 0.5mg/kg caudally 10 min before end may be helpful but prolong emergence
- Both Dexmedetomidine and Clonidine reduce incidence but prolong wake up
- Dex infusion 0.2-1ug/kg/hr or bolus of 0.3ug/kg proven effective
- MgSO₄ as 30mg/kg bolus with infusion of 10mg/kg/hr has shown to decreased incidence in adenotonsillectomy but possibly to analgesic effect

Treatment

- Non-pharmacological: Ensure safety, reassure carers, exclude physical discomfort
- Pharmacological:
 - Treat pain if required
 - Midaz 0.025mg/kg IVI
 - Propofol 0.5-1mg/kg IVI
 - Fentanyl 1-2ug/kg

Conclusion

- Pre med
- Use ketamine/dexmedetomidine/Propofol towards end of surgery

- Avoid volatiles if feasible
- Allow slow, quiet wake-up