The Combative Pediatric Patient

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Disclosures

- No financial disclosures
- Will discuss use of a medication that is not FDA approved in children
Previous attempts while awake and under sedation have both failed. He is autistic and has a history of biting care providers. How will you pre-medicate this patient?
What would you do?

1. Single breath mask induction
2. PO midazolam
3. PO midazolam & ketamine
4. Intranasal medication
5. IM ketamine
What we did….

- 20mg (0.4mg/kg) midazolam and 250mg (5mg/kg) ketamine (12:20)
- Wheeled to endoscopy suite
- Patient severely agitated
- 100mg (2mg/kg) IM ketamine (12:21)
- Patient sedated enough to tolerate mask induction
- Uneventful intraop and postop course
The Combative Pediatric Patient

- Who is at risk
- Stress of induction
- Pharmacologic options
- Physical restraint
Profile of a “difficult” child

- Neurologic or developmental disabilities
- Behavioral disorders
- Autism
- Mental health or personality disorders
- Hx of combative behavior
- Recent physical or psychological trauma
* Age
* Temperament
* Previous hospital-related distress
* Repeated interventions
* Parental anxiety
Psychological Interventions

- Basic education/explanation of procedures
- Operating room visit
- Family counseling
- Mock inductions

- Play therapy
- Distraction methods
- Engagement with anesthesia provider
The Perfect Induction
Stormy Induction

- ⅓ children distressed at induction
- ¼ require some degree of physical restraint
- Causes stress to child, parents, and care providers
- May be associated with postoperative behavioral changes
Create a Less Threatening Environment

- Parental presence
- Personal clothing
- Personal comfort objects
- Child friendly equipment
- Distraction techniques
- Avoid overstimulation
“Every medication by every route”

- Most commonly used agents:
  - Midazolam, ketamine, fentanyl, dexmedetomidine, clonidine, combined modalities
- Most commonly used routes:
  - Oral, nasal, IM
- Typically reserved for 2 subsets:
  - Preschool and school age children with anxiety
  - Uncooperative and combative children
Midazolam

- Benzodiazepine
- Most commonly used sedative premedication
- Suggested to decrease postoperative behavioral disturbances. Caution for paradoxical rxn
- Oral route: 0.5mg/kg (max 20mg)
  - Sedative effects in 5-10min, peak effect 20-30min
  - Bitter taste, requires patient (parent!?) cooperation
- Intranasal: 0.2mg/kg
  - Peak effect in 5-10 minutes
  - Minimal patient cooperation required
  - Burning sensation
**Ketamine**

- Phencyclidine derivative
  - dissociative anesthetic
- CV stable, potent analgesic
- Contraindications/caution:
  - increased secretions
  - increased IOP/ICP
- Dosing:
  - 0.5-1mg/kg IV
  - 2-3mg/kg IM
  - 6-10mg/kg PO
Fentanyl

- Opioid analgesic
- Side effects: puritus, respiratory depression, nausea/vomiting
- Transmucousal – lollipop
  - “Atique” 10-20mcg/kg
  - 33% bioavailability – decreased if chewed or swallowed
  - Sedation in 20 minutes, peak effect in 30-45min
- Intranasal route
  - 1-2mcg/kg
Highly selective $\alpha_2$ agonist

- Sedative and mild analgesic effects
- Not FDA approved in children
- Potential hemodynamic response
- ~2 hour elimination half life
- Intranasal or buccal administration
  - 1-2µg/kg $\rightarrow$ 30-60 minutes until sedation
Combined Modalities

- Ketamine (1-2mg/kg) and midazolam (0.1-0.2mg/kg) equal premedication, prolonged recovery compared to ketamine (2 mg/kg) **IM**

- Midazolam (0.25 mg/kg) and ketamine (3 mg/kg) better premedication than midazolam (0.5 mg/kg) or ketamine (6 mg/kg) **PO**
25 healthy, uncooperative children, mean age 3 years 8 months (± 1 year 3 months)

Child's behavior assessed during three treatment sessions:
1. control, with no diazepam or placebo
2. with diazepam
3. with a placebo

Results:
- Behavior significantly better with diazepam than with the placebo or with neither
- No adverse effects noted, such as vomiting or respiratory depression

Conclusion:
- Oral administration of 0.3 mg/kg diazepam at home by the parent is an effective and safe technique for preoperative sedation of fearful child patients

Probably not a good idea

“These cases illustrate the essential reason for having sedation guidelines that admonish against administration of sedating/anxiolytic medications at home or by those not qualified to provide skilled observation and rescue should an adverse event occur. Sedation guidelines allowing preprocedural drug administration at home should be modified to eliminate such practices”
Physical Restraint

- When clinical situation warrants
- Must have family and staff in agreement & available
- Decisive, speedy, roles outlined
- Appropriate technique essential to avoid injury
- Typically for IM injection* or inhalational induction
- Debriefing session with child, staff, parents if/when possible
References