Procedural Sedation: Paediatrics

Dr. Rodrick Lim  MD, FRCPC, FAAP
Site Chief Paediatric Emergency Department
Associate Professor of Paediatrics
Schulich School of Medicine and Dentistry
London Ontario Canada

April 2011
Goals:

• Define procedural sedation and it’s goals
• An ED checklist for safe procedural sedation
• Factors to consider before embarking on procedural sedation
• Updates on Pediatric use of Ketamine and Propofol
Procedural Sedation

• Sedative and analgesic agents are used to reduce the anxiety and pain experienced by patients during procedures in order to:
  – Decrease the length of time necessary to perform a procedure
  – Increases the likelihood of success
  – Reduces the potential risk of injury to the patient or health care worker because of uncontrolled movements
Spectrum of Sedation

- Procedural sedation involves altered levels of consciousness
  - Minimal
  - Moderate
  - Deep
  - Dissociative sedation levels
- Can be safely and effectively performed in the ED by emergency physicians
Procedural Sedation

• Agents commonly used for sedation of patients in the ED include but are not limited to opioids, benzodiazepines, and barbiturates, as well as other specific agents.

Commonly used agents include:

– Ketamine
– Propofol
– Etomidate
– Nitrous oxide.
Goals:

• Define Procedural Sedation and it’s goals

• An ED checklist for safe Procedural Sedation

• Factors to consider before embarking on Procedural sedation

• Updates on Pediatric use of Ketamine, Propofol
Procedural Sedation in Your ED

• Sedation in the Emergency Department
• Revised and approved by the ACEP Board of Director
• Ann Emerg Med. 2011;57:469
ACEP Checklist

• Emergency physicians who have received the appropriate training and skills necessary to safely provide procedural sedation

• Familiar with the pharmaceutical agents they use and be prepared to manage their potential complications.
ACEP Checklist

• The appropriate drugs and dosages must be chosen and administered in an appropriately monitored setting, and a patient evaluation should be performed before, during, and after their use.
ACEP Checklist

• Institutional and departmental guidelines related to the sedation of patients should include credentialing and verification of competency of providers, selection and preparation of patients, informed consent, equipment and monitoring requirements, staff training and competency verification, criteria for discharge, and continuous quality improvement.
Goals:

• Define Procedural Sedation and it’s goals
• An ED checklist for safe Procedural Sedation
• Factors to consider before embarking on Procedural sedation
• Updates on Pediatric use of Ketamine, Propofol
Factors:

- Indication
- Contraindication – Relative or Absolute
- Risks of Proceeding
- Risks of Not Proceeding

- What alternatives are available
Factors: Our Case

• Indication
• Contraindication – Relative or Absolute
• Risks of Proceeding
• Risks of Not Proceeding

• What alternatives are available
Goals:

• Define Procedural Sedation and it’s goals
• An ED checklist for safe Procedural Sedation
• Factors to consider before embarking on Procedural sedation
• Updates on Pediatric use of Ketamine, Propofol
Clinical Practice Guideline for Emergency Department Ketamine Dissociative Sedation: 2011 Update

Steven M. Green, Mark G. Roback, Robert M. Kennedy, Baruch Krauss
Contraindications: Absolute

• Infants younger than 3 months
  – Multiple case reports of airway obstruction, laryngospasm, and apnea. Consistent with other agents, representing infant-specific differences in airway anatomy and reactivity and laryngeal excitability

• Exacerbates Schizophrenia and alternative agents should be used
Contraindications: Relative

- Age 3 months-12 months now omitted as relative contraindication 2011

Contraindications: Relative

- Major procedures stimulating the posterior pharynx (e.g. endoscopy) increase the risk of laryngospasm, whereas typical minor ED oropharyngeal procedures do not (New to 2011)
- History of airway instability, tracheal surgery, or tracheal stenosis (presumed higher risk of airway complications)
Contraindications: Relative

• Active pulmonary infection or disease, including upper respiratory infection or asthma (higher risk of laryngospasm)

• Known or suspected cardiovascular disease, including angina, heart failure, or hypertension (exacerbation caused by sympathomimetic properties of ketamine)
Contraindications: Relative

- Avoid ketamine in patients who are already hypertensive
- Central nervous system masses, abnormalities, or hydrocephalus (increased intracranial pressure with ketamine)
- Head Injury removed as Relative Contraindication 2011
Contraindications: Relative

- Glaucoma or acute globe injury (increased intraocular pressure with ketamine)
- Porphyria, thyroid disorder, or thyroid medication (enhanced sympathomimetic effect)
Other Highlights

• Route of Administration
  – Emphasis on IV over IM route when feasible

• Coadministered Medications
  – Routine prophylactic anticholinergics no longer recommended
  – Routine prophylactic benzodiazepines may benefit adults but not children
  – Prophylactic ondansetron can slightly reduce vomiting

Michael D. Mallory, Amy L. Baxter, Daniel J. Yanosky, Joseph P. Cravero and Pediatric Sedation Research Consortium

Annals of Emergency Medicine Volume 57(5): 462-468
Propofol: Pediatrics

• More serious adverse events occurred in 581 sedations (2.28%; 95% confidence interval 2.1% to 2.5%).

• There were 2 instances of aspiration, 1 unplanned intubation, and 1 cardiac arrest.
Propofol: Pediatrics

• Significant predictors of serious adverse events were:
  – weight less than or equal to 5 kg
  – American Society of Anesthesiologists classification greater than 2
  – Adjunctive medications (benzodiazepines, ketamine, opioids, or anticholinergics)
  – Nonpainful procedures, and primary diagnoses of upper respiratory illness or prematurity
Back To Case:

• Important Points:
  – Procedural Sedation is Safe and Effective when used properly, with mechanisms in place to ensure proper training, monitoring and continual quality improvement
  – If/When/What are best answered when considering individuals patients indications, contraindications, urgency and potential risks of proceeding vs. not proceeding

April 2011

2011 Talk Trauma