Clinical update no. 539
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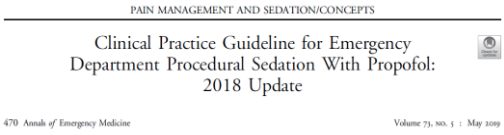

PAIN MANAGEMENT AND SEDATION/CONCEPTS

Clinical Practice Guideline for Emergency Department Procedural Sedation With Propofol: 2018 Update

470 Annals of Emergency Medicine Volume 73, no. 5 : May 2019

Ongoing research and experience guide the use of propfol in ED and warrant a review of current practice Guidelines.

CONTRAINDICATIONS

Allergy to eggs or soy products is no longer considered a contraindication to use of propofol. Propofol is made from the oil and fatty components, whereas allergy is to the proteins. Propofol has been safely used in adults and children with food allergy, including to egg, soy and peanuts, with no reported cases of anaphylaxis and no increased risk of allergic reactions. The American Academy of Allergy, Asthma & Immunology has stated that it is safe for patients with soy or egg allergies. The only true contraindication to propofol is a propofol allergy.

HIGHER-RELATIVE-RISK PATIENTS

Age

There is an increase in adverse events at extremes of age, <6mth and >75yr, with risk increasing from 50yr.

Underlying Medical Condition

Adverse events are more common with undelying medical conditions. Attention to volume status is important to avoid hypotension.

Fasting State

Available evidence shows no association between fasting length and risk of aspiration for both adult and paediatric patients. The urgency of the procedure guides providing sedation regardless of fasting status. Evaluate the risk which includes recent food intake and underlying medical condition, and if there is concern then aim for light sedation consistent with what is appropriate for the procedure, or use an alternate agent such as ketamine. There is however no evidence to support the safety one sedation regimen over another.

PERSONNEL

Staffing and skill levels appropriate to managing likely complications is required. Policies will guide this however there is a grey area as to the minimum staffing required to safely perform a procedure or intervention.

PROPOFOL ADMINISTRATION: PHARMACOLOGY

Acts on GABA receptors with onset within 30 – 60 sec, blood-brain equilibration in 1 - 3 minutes and duration < 10 minutes. Peak effect is usually at 2 – 4 minutes.

Younger children require higher bolus dosing with a shorter duration of effect.

Dosing after the initial bolus will last longer.

Adults

Standard dosing is an initial bolus of 0.5 - 1.0 mg/kg, based on lean body mass.

Reduce dose in the elderly; 100 – age (mg) is a suggested initial dose.

Pediatrics

Children require higher per-kilogram dosing because of a larger volume of distribution.

Suggested dosing is 2 mg/kg for ≤ 3 years; and 1.5 mg/kg up to teenage years. There is substantial variation in the dose required.

Infusion

An infusion avoids excess dosing with repeat boluses, and suboptimal sedation as the effect wears off. Suggested infusion rates are 6 to 9 mg/kg/hr (up to 15 mg/kg/hr in children).

80kg adult: 480 – 720 mg/hr = 48-72 ml/hr.

20kg child (5yr): 15 mg/kg/hr = 300 mg/hr = 30 ml/hr.

PROPOFOL ADMINISTRATION: CLINICAL EFFECT

Propofol has no analgesic effect, and adding fentanyl or ketamine as an analgesic is safe.

Ketamine Coadministration

Ketamine can be added as fixed dose for analgesia (0.1 - 0.5 mg/kg for adult; 0.5 mg/kg for infants/young children).

Ketamine and propofol can be mixed together in a 1:1 or other ratio (known as "*ketofol*"), and given as the same volume/kg as single agent propofol. Recovery time is prolonged modestly (8 min, v 6 min with propofol alone).

Opioid Coadministration

Fentanyl is safe and effective.

Nonparenteral Adjuncts include local anaesthetic.

INTERACTIVE AND MECHANICAL MONITORING

Continuous monitoring is required. Capnography allows early detection of hypoventilation.

Supplemental Oxygen During Propofol Sedation

O2 administration may avoid hypoxaemia if there is respiratory depression, especially in children who have less respiratory reserve. Pre-oxygenated patients tolerate longer apnoea without requiring assisted ventilation.

POTENTIAL ADVERSE EFFECTS

Adverse events occour in <10% of ED sedations, generally without patient sequelae. Rates in children are similar to adults.

Laryngospasm is reported in < 1%; intubation in < 0.1% adults and < 0.02% children.

Rates are equivalent with ketofol and fentanyl; i.e. the theoretical safety with adding ketamine is not demonstrated.

Pain with injection can be reduced by giving IV lignocaine at 0.5 mg/kg with a tourniquet in place 30 - 120 sec before injection. Lignocaine can also be mixed with propofol.

Nausea, Emesis, and Aspiration

Propofol has antiemetic properties.

Aspiration is rare, and less in children.

Propofol Infusion Syndrome

There are no reports from ED use.

RECOVERY AND DISCHARGE

Recovery agitation can occur with ketofol. Further sedation after initial recovery is unlikely and adverse effects after discharge has not been reported. Flush IV lines in children to prevent further administration.

PAIN MANAGEMENT AND SEDATION/POLICY STATEMENT

Unscheduled Procedural Sedation: A Multidisciplinary Consensus Practice Guideline

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Regulatory and accreditation standards focus on elective procedural sedation. Extrapolation to unscheduled, time-sensitive procedures can confuse and impede patient care.

Basically, anaesthetists should not dictate what ED physicians can do. The document outlines criteria for safe practice. A few points

Procedural Sedation Depth, Not Drug

All sedatives and opioids, excluding ketamine, have a spectrum of effect ranging from minimal sedation to general anaesthesia. Safe use is based on dose and ability to manage those effects. There is no basis to restrict any agent for use in procedural sedation.

Pre-Sedation Oral Intake

There is no evidence that non-compliance with elective fasting guidelines increases risk.

Physiologic Monitoring

Capnography is mostly routine for deep sedation, though is optional for moderate or dissociative sedation. It alerts to respiratory depression or obstruction and the need for intervention or to adjust drug dosing.

Supplemental Oxygen

Supplemental O2 delays onset of hypoxia that may result from unrecognised respiratory depression (by the same token it can avoid adverse sequelae by avoiding hypoxia).