SHADY GROVE ADVENTIST HOSPITAL
PATIENT CARE POLICY MANUAL

SEDATION, KETAMINE

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PURPOSE:

To establish guidelines for patients receiving Ketamine sedation by non-anesthesiologists.

POLICY:

Due to the unique pharmacologic effects of Ketamine and the rare but possible need for advanced airway maneuvers, only practitioners skilled in advance airway management will be allowed to administer Ketamine outside the Department of Anesthesiology. Ketamine's use will be restricted to physicians who are board certified/admissible in pediatric critical care, pediatric emergency medicine and general emergency medicine who have privileges to administer moderate sedation and who have completed a separate competency based credentialing program in the administration of Ketamine.

DEFINITIONS:

Ketamine is a unique pharmacological agent that produces a dissociative state when administered to patients. It is a phencyclidine derivative, which produces excellent analgesia and sedation, but not complete immobility.

Ketamine's unique effects do not place it neatly into any of the anesthesia classifications for sedation, i.e. moderate sedation, deep sedation and general anesthesia. Due to the patient's depressed level of consciousness, it is classified most appropriately under the deep sedation definition.

EFFECTS OF KETAMINE:

1. Dissociation – following administration of ketamine, the patient passes into a fugue state. While the patient's eyes remain open, they will not be able to respond to verbal or tactile stimuli.
2. Catalepsy – maintenance of normal or slightly enhanced muscle tone.
3. Analgesia – is substantial or complete.
4. Amnesia – total amnesia is typical of ketamine sedation.
5. Airway Reflexes – while there is a potential risk of loss of airway protective reflexes, no cases of aspiration have been reported when ketamine was used as the sole agent for deep sedation. The ultimate effect of ketamine on the laryngeal airway reflexes may be exaggeration or depression.
6. Cardiovascular effects – blood pressure and heart rate are typically mildly increased.

ADVERSE REACTION:

Elevated BP, hypotension, bradycardia; apnea following rapid IV administration of high doses, laryngospasm, diplopia, nystagmus, hyper-salivation, increased skeletal muscle tone.

DOSAGE:

The dosage range for ketamine is from 0.25 to 2 mg/kg IV. Dose ranges from 1 to 2 mg/kg result in deep sedation for noxious procedures. In some cases IM administration (3-4mg/kg) may be appropriate when IV placement is impractical. In this case equipment to place an IV line must be immediately available. IV use is indicated when titration to effect is desired.

Since ketamine may cause increased oropharyngeal secretions, atropine 0.01 mg/kg (minimum 0.1 mg, maximum 0.5 mg) will be given concomitant with ketamine. In older children, due to rare reports of emergence reaction, a small dose of benzodiazepine is suggested (most commonly midazolam 0.05 mg/kg). These medications may be combined in the same syringe for IM administration.

PATIENT SELECTION

Ketamine's use is restricted to pediatric patients age 12 months to 15 years. These patients will undergo routine pre-procedure evaluation according to the standards for the moderate sedation protocol. Patients with ASA status 1 and 2 are most appropriate sedation outside the operating room.

CONTRAINDICATIONS

1. History of airway instability, tracheal surgery, or tracheal stenosis.
2. Active pulmonary infection or upper respiratory infection with productive cough or copious secretions.
3. Head injury associated with loss of consciousness, altered mental status, or emesis.
4. Central nervous system masses, abnormalities, or hydrocephalus.
5. Poorly-controlled seizure disorder
6. Acute globe injury.

PRE-PROCEDURE EVALUATION

Patients should undergo standard pre-procedure evaluation according to the moderate sedation protocol. Moderate sedation NPO guidelines will be followed.

It is recognized that some emergency procedures must be performed in spite of a suboptimal NPO status. In these cases, sedation may be used, but careful clinical judgment is required to determine an appropriate level of sedation, which does not place the patient at an unacceptable rise of regurgitation and aspiration of gastric contents. In selected cases, medications such as bicitra, H2 blockers, or pro-motility agents may be considered. In every case, suction will be immediately available if needed.

INTRA-PROCEDURE

1. Standard intra-procedure monitoring according to the moderate sedation policy will be used.

2. Equipment to deliver supplemental oxygen will be immediately available. Supplemental oxygen will be titrated to achieve oxygen saturation > 95%.

EMERGENCY PREPAREDNESS

Standard equipment, as outlined in the moderate sedation policy, will be available. The most common serious complication is laryngospasm. Appropriate sized bag-valve-mask should be at the bedside as outlined in the policy. Equipment and drugs to immediately secure an airway or intubate a patient should be immediately available.

POST-PROCEDURE

Standard post-procedure monitoring will be according to the moderate sedation policy.

REFERENCES

1. Guidelines for Pediatric Sedation, American College of Emergency Physicians, 1995
2. Anesthesiology 1985, May; 62(5):551-6, Article, The Effect of Ketamine on the Functional Residual Capacity in Young Children.
3. J Clin Anesth 1995, Jun; 7(4):273-80, Article, Total Intravenous Anesthesia for Children Undergoing Brief Diagnostic or Therapeutic Procedures.
4. Pediatric Anesthesia Reports, Vol. 1, No. 1, Jan 1998, pg. 7.