

KETAMINE CONTINUOUS INFUSION FOR INTRACTABLE EPILEPSY (ADULTS)- ICU

- PURPOSE:** To outline the management of adult patients in the adult ICUs only, receiving ketamine for intractable epilepsy.
- SUPPORTIVE DATA:** Intractable epilepsy is defined as status epilepticus refractory to more than three antiepileptic drug therapies, and occurs in 10-17% of adult patients with status epilepticus. Intractable epilepsy increases morbidity and mortality. Ketamine is an anesthetic that may be useful for intractable epilepsy, but should be used as a last resort, because limited information is available and due to its potential adverse effects. Patients receiving Ketamine should be on continuous EEG monitoring, which is evaluated by the physician. A common and expected side effect of ketamine is nystagmus.
- Ketamine continuous infusion for intractable epilepsy may be used only for patients over 18 years of age with refractory status epilepticus that fails most of the following therapies in combinations:
- Phenytoin or fosphenytoin
 - Valproic acid
 - Levetiracetam
 - Topiramate
 - Oxcarbazepine
 - Gabapentin
 - Lacosamide
 - Midazolam continuous infusion
 - Pentobarbital induced coma
 - Phenobarbital
 - Propofol continuous infusion
- Contraindications include:
- Patients who demonstrate improvement with standard therapies
 - History of, or current myocardial ischemia or arrhythmias
 - Copious pulmonary secretions
 - Concurrent closed head injury
 - Intracranial mass
 - History of, or current glaucoma
 - Psychiatric history
- Ketamine continuous infusion for intractable epilepsy requires approval by the Neurology Service attending physician, and requires the attending physician of the primary service to write the order and renew the order daily. Patients also must be receiving mechanical ventilation, and must be on a midazolam continuous infusion for prevention of emergence effect (dissociative psychotic symptoms).
- Patients should not be weaned from mechanical ventilation while receiving continuous Ketamine. The patient may also be placed on continuous EEG monitoring as determined by the Neurology physician.
- ASSESSMENT:**
1. Assess the following a minimum of every hour.
 - Heart Rate
 - Blood Pressure
 - Respiratory Rate
 - Oxygen saturation per pulse oximetry
 2. Assess for the following adverse effects a minimum of every 2 hours:
 - Change in mental status
 - Tonic-clonic movements and tremors
 - Increased pulmonary secretions, hypersalivation
 - Tachycardia/ Bradycardia

- Hypertension/ Hypotension
- Increased ICP (for patients with ICP monitoring)
- Signs of increased ICP (e.g. unequal pupils)

ADMINISTRATION:

- Evaluate blood gas as drawn.
- Administer via infusion pump with Guardrails
- Administer medication as ordered.
 - Use premixed medication: 500 mg in 250 mL bag (concentration 2 mg/mL)
 - Loading dose: 0.5 – 1 mg/kg IV bolus at rate of 0.5 mg/kg/minute. May repeat in 1-2 minutes (up to total of 2 mg/kg) if desirable effect is not achieved with initial dose.
 - Maintenance dose: 5 – 20 mcg/kg/min
 - NOTE: Each change in dose requires an attending physician order.
- Ensure Ketamine is infused in a dedicated line with no other medications.
- Ensure patient is also receiving midazolam continuous infusion as ordered.

SAFETY:

- Ensure all physician's orders for ketamine are written by the attending physician and that the order is rewritten every day by the attending physician.
- Ensure the following:
 - Patient is receiving mechanical ventilation
 - Infusion pump with Guardrails is used
 - IV is patent
 - Drug concentration and dosages are correct and within prescribed parameters
- Verify MAR and pump settings with second RN prior to administering each new bag for correct:
 - Medication
 - Dose
 - Concentration
 - Pump settings
 - Patient

REPORTABLE CONDITIONS:

- Notify the physician immediately for:
 - Change in mental status
 - Tonic-clonic movements and tremors
 - Increased pulmonary secretions, hypersalivation
 - Tachycardia/ bradycardia
 - Hypertension/ hypotension
 - Increased ICP (for patients with ICP monitoring)
 - Signs of increased ICP (e.g. unequal pupils)

PATIENT/ FAMILY TEACHING:

- Instruct on the following:
 - Purpose of the medication
 - Purpose of monitoring devices (e.g. EEG)
 - To notify the nurse of side effects

ADDITIONAL STANDARDS:

- Implement the following:
 - Mechanical Ventilation
 - Artificial Airway
 - Sedation and Analgesia (Intravenous) – ICU
 - Seizure Activity

DOCUMENTATION:

- Document in accordance with documentation standards.

REFERENCES:

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Consult: LAC+USC Pharmacy

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