Low-Dose Ketamine Infusion for Analgesia

Inclusion Criteria:
- Suspected or potential opioid induced hyperalgesia
- Acute pain in patients on chronic high dose opioids
- Neuropathic pain resistant to standard treatments
- Patients with cancer and chronic opioid requirements
- As a component of palliative or end of life care for analgesia

Exclusion Criteria:
- Allergy to ketamine
- Liver failure
- Myocardial ischemia
- < 3 years of age

Caution in patients with:
- Uncontrolled hypertension
- Severe hypovolemia
- Psychotic disorders
- Increased ICP in patients not receiving mechanical ventilation
- Cerebral vascular disease and aneurysms
- Renal or hepatic impairment (dose reduction maybe required)
- Cardiac failure
- Pulmonary hypertension
- Poorly controlled seizure disorders
- Thyrotoxicosis

Pre-assessment
- Obtain baseline vital signs including SP02 and sedation score prior to start of infusion.
- Continuous pulse oximetry and cardiorespiratory monitoring.

Dosing

Analgesia
Continuous Infusion
- *Recommended Starting Dose:* 0.05 – 0.1 mg/kg/hr
- *Dosing Range:* 0.05 – 0.3 mg/kg/hr – unless permission given by Pain Management or Palliative Care Teams.
- *Maximum Suggested Dose:* 40 mg/hr - unless permission given by Pain Management or Palliative Care Teams.

End of Life Care
Continuous Infusion
- *Recommended Starting Dose:* 0.05 – 0.1 mg/kg/hr
- Dosing is based on titration to clinical effect/comfort and to avoid occurrence of any undesirable dose limiting side effects.
- Maximal doses will be determined per patient's clinic effect, by the palliative care team.

Recommendations/Considerations
Treatment or prevention of excessive oral secretions:
- *Recommend:* glycopyrrolate
  - *Starting dose:* 0.004 mg/kg/dose IV every 6 hours as needed for hypersalivation.
  - IV dose may be increased to a maximum of 0.01 mg/kg/dose (1.5 mg/dose maximum) or 20–40 mcg/kg/dose PO every 6-8 hours.
- Frequency of assessment may be increased based on the patients'' response to the ketamine infusion.

Assessment
- Assess and document respiratory rate, SPO2 and sedation score every 30 minutes x 2, then 1 hour x 1, then every 4 hours (per floor policy and times) after starting ketamine infusion.
  - i.e. if started at 8am, vitals at 0830, 0900, 1000, then 1200, 1600, 2000, 0000.
- For CHOC ketamine titrations in rate: Q30min x 2, then Q4 per unit policy.
- Monitor for possible side effects including:
  - Fatigue
  - Drowsiness
  - Dizziness
  - Vivid dreams
  - Misperceptions or confusion
  - Hallucinations

❖ **Ketamine infusions and titrations are only started during the hours while Pain Service is physically available.**

Patient Education
- Low-Dose Ketamine Infusion: Patient/Family Education

Interventions
If patient experiences dysphoria or hallucinations:
- Reduce dose of ketamine and prescribe benzodiazepine (e.g. lorazepam 0.025 mg/kg every 12 hours)
- Consider scheduled low-dose benzodiazepines (lorazepam 0.03 – 0.05 mg/kg/dose IV every 6 hours) to prevent or mitigate psychomimetic side effects, if they occur.

Refer to Patient Care Policy F968 Low-Dose Ketamine Infusion for Analgesia

Discharge Criteria
- Completion of weaning protocol for patients on infusion greater than 5 days.
- Successful transition to oral regimen and maintained for 24 hours.

Approved Evidence Based Medicine Committee – 9/15/2021

Reassess the appropriateness of Care Guidelines as condition changes and 24 hrs after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.

Pasero Opioid-Induced Sedation Scale (POSS)

S = Sleep, easy to arouse

1 = Awake and alert

2 = Slightly drowsy, easily aroused

3 = Frequently drowsy, arousable, drifts off to sleep during conversation

4 = Somnolent, minimal or no response to verbal and physical stimulation

See: Pasero, C. (2009). Assessment of sedation during opioid administration for pain management. Journal of PeriAnesthesia Nursing, 24(3), 186-190.

References
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