Use of ketamine in uncontrolled acute and procedural pain


Presenter: A. Schrikker
Aim of the article:

• Exploring the role of ketamine in pain management.
Action of Ketamine?

• Ketamine is an analgesic used to treat uncontrolled acute and procedural pain.
• To prevent pain from becoming persistent, the NMDA receptor needs to be blocked.
• Works by blocking the NMDA receptor, making it inactive.
Signs and symptoms of neuropathic pain:

*Due to nerve damage:

• Pain becomes worse irrespective of the movement;
• Experience of paroxysms pain without warning;
• Description of pain: burning, shooting or electrical sensation;
• Occasionally may be linked to sensation of ants crawling under the skin.
Signs and symptoms cont.

- **Allodynia** - when a stimulus that does not normally result in pain becomes painful;

- **Hyperalgesia** - increased sensitivity to pain.
Fulfillment of one or more of the following criteria may indicate uncontrolled pain as a result of an active NMDA receptor:

- neuropathic pain (incl. phantom limb pain);
- hyperalgesia or allodynia;
- poor response to opioids;
- history of high opioid consumption prior to injury or surgery.
Intravenous trial Ketamine

• Before the trial, a pain score at rest and when moving should be obtained.

• Ketamine is then administered intravenously in 2.5mg every 5 minutes to a maximum of 10mg.

• If the patient has an active NMDA receptor, pain diminishes rapidly, usually from severe to mild in five to ten minutes.
If the NMDA receptor is not active, ketamine will have no effect (Chumbley 2010).

In article, the author noted that patients receiving a trail of intravenous ketamine do not have to be monitored provided that they are stable.

Rationale: the drug produces no effect on vital signs at sub-anaesthetic doses (Schug 2004).
Trial continued #2

• Patients may feel light headed when undergoing a ketamine trial.
• Patient safety is key and other organizations may recommend monitoring of vital signs during any such trial.
• Local guidelines or protocols should always be followed.
Discontinuing ketamine

- Done before patients are discharged;
- No need to wean, but in practice a slow reduction is helpful;
- If painful symptoms recur then the patient is not ready to stop taking the drug;
- The patient may need to start other neuropathic pain medication such as gabapentin or nortriptyline.
Conclusion

• Low-dose ketamine is a safe and effective method for treating uncontrolled pain.
• It should not be used routinely.
• Ketamine should be administered by specialist pain services and given in conjunction with other medications to manage pain.
• If used effectively can prevent the development of persistent pain.
Our setting

The following age appropriate tools used to assess pain:

• Neonatal Infant Pain Scale  
  Preterm/ Neonatal Infants under 1 years of age
• FLACC Scale  
  Children who cannot verbalize if they have pain; Children between 1 and 3 years old
• Faces Pain Scale  
  Children who can verbalize their pain (4-16 years old)
• Eland Body Tool  
  Children who can verbalize their pain (helps to identify pain severity)
Why assess pain?
Assessing and rating of pain provides an objective method to guide intentional management.

When do we assess pain?
6 hourly on every child (before analgesia and after analgesia)
If a child is in pain, assess the pain more frequently as described below.

How do we assess pain?
Assess pain during rest and movement.
Involve the child’s parents in your assessment; ask them about the child’s behaviour towards pain.

What to do?
Select an appropriate pain tool for children according to their developmental stage and ability to self report (e.g. Neonatal pain scale (NIPS), FLACC scale, Faces scale or the Eland body tool).

If a child’s pain escalates beyond the accepted relevant pain rating, contact the doctor, registered nurse or pain management team to review pain treatment or prescribe alternative analgesia.

*Assess the child’s pain every hour and document your findings on the “pain record”; thereafter assess every four to six hours.

Check and document pain levels until you are assured that the child is pain free.
# Pain score and Management

<table>
<thead>
<tr>
<th>Pain Scale (out of 10)</th>
<th>Interpretation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 2</td>
<td>Relaxed/ No pain</td>
<td>If required: Paracetamol, (Paracetamol has a twofold function: analgesia and antipyretic) or NSAIDs (Anti-inflammatory analgesia; antipyretic)</td>
</tr>
<tr>
<td>3 – 5</td>
<td>Mild pain</td>
<td>Paracetamol &amp;/ NSAIDs and Valoron drops</td>
</tr>
<tr>
<td>6 – 8</td>
<td>Moderate pain</td>
<td>Paracetamol, Valoron drops, NSAID’s or Morphine Adjuvants (e.g. Gabapentin and Clonidine) or Epidural</td>
</tr>
<tr>
<td>9 – 10</td>
<td>Severe pain</td>
<td>Morphine infusion and Paracetamol, Adjuvants or Epidural/ Regional anaesthesia</td>
</tr>
</tbody>
</table>

**Source:** Merkel et al.
Complementary alternatives to pain management

- Advocate the application of a local anaesthetic (e.g. EMLA) for venipuncture.
- Offer complementary measures to infants/children in pain.
- These include: breast feeding, sucrose dummy, distraction...
- Creative therapies i.e. play therapy, aromatherapy, art therapy, music therapy.
The FLACC Scale

**What to do:**
A score equal or greater than 5 indicates pain.
If so, contact the doctor, registered nurse or pain management team to assess pain treatment or prescribe alternative analgesia.
Continue to assess pain until you are assured that the child is pain free.

<table>
<thead>
<tr>
<th>Categories</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>No particular expression or smile</td>
<td>Occasional grimace or frown, withdrawn, disoriented</td>
<td>Frequent to constant frown, quivering chin, clenched jaw</td>
</tr>
<tr>
<td>Legs</td>
<td>Normal position or relaxed</td>
<td>Uneasy, restless, tense</td>
<td>Kicking or legs drawn up</td>
</tr>
<tr>
<td>Activity</td>
<td>Lying quietly, normal position, moves easily</td>
<td>Squirming, shifting back and forth, tense</td>
<td>Arched, rigid or jerking</td>
</tr>
<tr>
<td>Cry</td>
<td>No cry (awake or asleep)</td>
<td>Moans or whispers, occasional complaints</td>
<td>Crying steadily, screams or sobs, frequent complaints</td>
</tr>
<tr>
<td>Consolability</td>
<td>No cry (awake or asleep)</td>
<td>Reassured by occasional touching, hugging or being talked to; distractible</td>
<td>Difficult to console or comfort</td>
</tr>
</tbody>
</table>

*Source: Merkel et al.*
Revised Wong Baker Faces Pain Scale

What to do:

A score equal or greater than 5 indicates pain. If so, contact the doctor, registered nurse or pain management team to assess pain treatment or prescribe alternative analgesia.

Continue to assess pain until you are assured that the child is pain free.

Source: Hicks et al.
Ketamine infusion - Children

- Prescribed by the anesthetist.
- Low dose ketamine 0.25mg-0.5mg/kg/hr.
- Observations done: saturation, pulse and blood pressure.
References

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