

Dissociative Associations: >1800 Uses of Ketamine (and counting) in the Land O'Lakes

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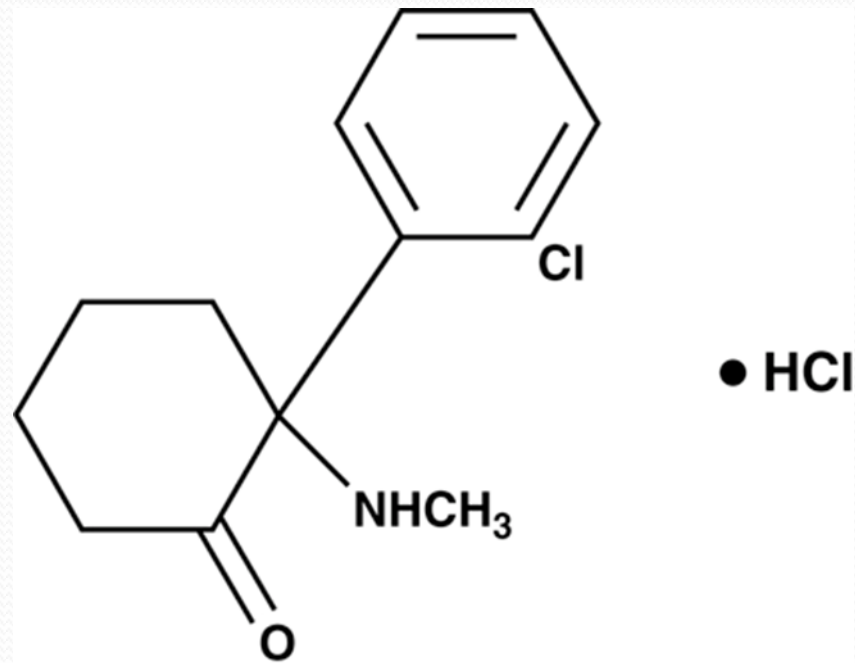


Dissociative Associations: Questions to Answer

- What is ketamine?
- What conditions are we using ketamine for, and what is the efficacy rate?
- What are the results after 4 years of use?
- What are the complications/adverse reactions that we have seen?

Ketamine

- **Generic Name:** Ketamine Hydrochloride
- **Trade Name:** Ketalar
- **Classification:** Sedative, Analgesic



Actions

- Phencyclidine derivative causes dissociative anesthesia
- Profound sedation and uncouples cortical pain perception.
- Airway reflexes remain intact
- Releases endogenous catecholamines
 - maintain blood pressure and heart rate
 - dilates bronchial smooth muscles
 - stimulates beta receptors in the lungs

Ketamine

Perception



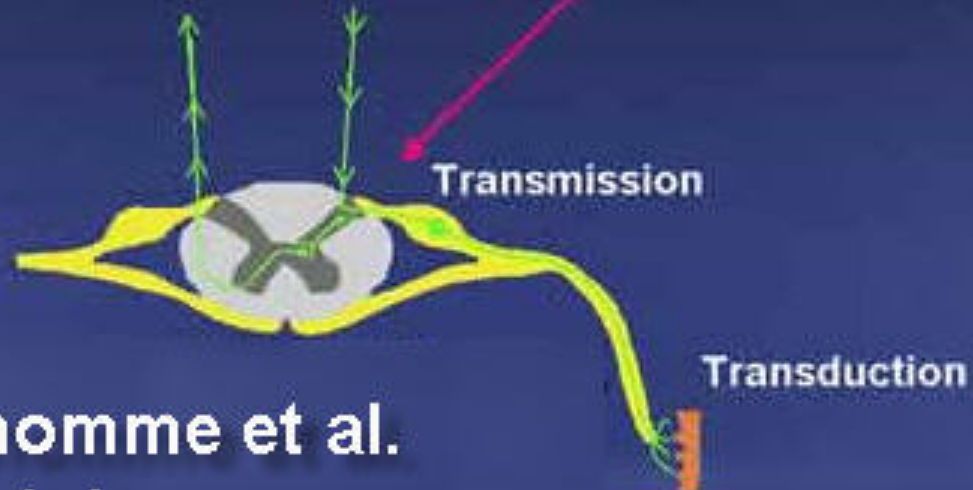
Ketamine

Modulation

Transmission

Transduction

Lavand'homme et al.
Anesthesiology
2005; 103: 813-820



Ketamine



So good,
the horses want it back



Indications

- Used for sedation of patients with behavioral emergencies or agitated delirium.
- Used for sedation of intubated or soon to be intubated patients with hypotension or hypovolemia.
- May be used for analgesia and sedation for painful procedures or painful conditions.

Ketamine Onset

- IV 1-2 minutes
- IM 3-8 minutes
- Compared to Versed IV onset 1-5 minutes, IM 10-20 minutes
- Compared to Ativan IV onset 1-5 minutes, IM 20-30 minutes
- Compared to Haldol IV 10 minutes, IM 20 minutes

Duration

- Analgesia: 10-15 minutes IV, 15-30 minutes IM.
- Sedation: Variable- at least as long as analgesia and IV may be up to 60 minutes and IM may be up to 90-150 minutes
- Longer with addition of narcotics/benzos

Severe behavioral emergencies

- 4-5 mg/kg IM or 1-2 mg/kg IV/IO, followed by midazolam 2 mg IV/IO on arrival to the ED.

Rapid Sequence Intubation

- 1-2 mg/kg IV/IO (give 0.5 mg/kg/min for intubation, total dose over 60 seconds)



Post-intubation Sedation

- 0.5 mg/kg IV/IO repeated every 15 minutes as needed to maintain an adequate sedation level.

Acute/Adjunctive Pain Management

- 0.1 mg/kg IV/IM/IO with a maximal initial dose of 10mg, may every 15 minutes for additional pain relief up to total maximum of 0.5 mg/kg.
- Take 0.1 ml and dilute in a 1 ml syringe with 0.9 ml of saline and administer slowly (3-5 minutes) through the highest access port on the IV line.
- Pediatric dosage is 0.1 mg/kg under age 14 to a maximum of 10 mg.

AT A LOCAL VETERINARY CLINIC AFTER HOURS...

YO, CLIFF, IT'S
TEN O'CLOCK. WHERE'S
THE KETAMINE?

I DON'T KNOW, BUTCH! SOME
KIDS BROKE IN AND TOOK
ALL THE HALLUCINOGENS!

WELL THAT'S JUST
GREAT! WHAT ARE WE
SUPPOSED TO DO FOR
FUN NOW? THIS PLACE
IS SO LAME... IF ANYONE
NEEDS ME, I'LL BE IN MY
KENNEL LICKING MYSELF.





Use in Behavioral Emergencies

- 77 patients of which 70 were defined as primary behavioral emergencies.
- 51% had suspected intoxication (ETOH/other), 40% unknown.
- 81.6% were identified as male.
- TASER deployed in 4%, 26% unknown.
- 82% required no further ketamine administration.
- Administration was rated 91% effective for this condition by EMS staff.



Use for induction of RSI

- In 47% the indication was for trauma, 34% for altered LOC, and 13% for respiratory compromise.
- 56.5% of patients were identified as male, and 41.3% identified as female.
- In 72.5% had no other sedatives/analgesics administered within 30 minutes of ketamine.
- Staff rated ketamine as 98% effective for induction in RSI.
- Staff rated ketamine as 92.5% effective in providing prolonged sedation after RSI was performed.



Use in Sedation

- In 41% the indication was for altered LOC, 25.5% for respiratory compromise, and 25.5% associated with trauma.
- 70.4% of patients were male, and 15.5% had suspected intoxication.
- In 49% of patients, other analgesics/sedatives were given within 30 minutes of ketamine administration.
- BUT, in 80% of patients, this was the last sedative medication given.
- Only 3 adverse reactions were reported.



Use in Pain Management

- In 57.2% of patients, the indication was for traumatic pain, and 42.4% for non-traumatic pain.
- In 72.3% of patients, no other analgesics/sedatives were administered within 30 minutes of Ketamine administration.
- In greater than 96.6% of patients, the medication was administered intravenously.
- Adverse reaction for this use was reported at < 0.02%.
- Staff felt that ketamine was 82% effective for pain management in this usage.

Adverse Reactions

- Allergic reaction-none
- Laryngospasm-none
- Emergence reaction-6 patients (0.003%)
- Required intubation (non-RSI)-8 patients (0.004%)
- Heart rate change >20%-8 patients (0.004%)
- SpO₂ change >10%-6 patients (0.003%)
- Death-2 patients (0.001%)
 - 1 in association with blunt trauma, and 1 in association with a behavioral emergency.
 - (association, not causation)

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QUESTIONS?

