CLINICAL GUIDE TO SUBCUTANEOUS SUBANESTHETIC KETAMINE

USE IN HOSPICE & PALLIATIVE CARE

1. Why Ketamine?

- Ketamine's main mechanism of action is an N-Methyl-D-aspartate (NMDA) receptor antagonist, but it also acts in other ways to alter brain and nerve plasticity in patients with central sensitization related to chronic pain.
- Oral bioavailability is poor due to first-pass metabolism, but many other routes of administration are available.

2. Human Research

- Ketamine at sub-anesthetic doses lowers pain intensity in human patients with chronic non-cancer pain, though wide variability in dosing protocols and routes makes the precise magnitude of benefit nebulous.
- Ketamine is also being widely used for treatment-resistant depression, suicidal ideation, and eating disorders. Research is exploring anti-tumor effects, anti-inflammatory effects, and neuroprotective effects.
- Bioavailability after SQ administration has been found to be 75-95%.

3. Veterinary Research

- Most veterinary studies at this time focus on the pharmacokinetics and safety of sedative and anesthetic doses of ketamine.
- Ketamine has been used and studied as a component of continuous rate infusions to control peri-operative and acute pain for several decades.
- Reports of utilizing subcutaneous, subanesthetic doses of ketamine for chronic pain are anecdotal at this time, but a handful of studies are currently underway.

4. Dosing & Routes of Administration

- Intermittent Injections: Zero Pain Philosophy introduced a protocol suggesting 0.5mg/kg SQ every 3-4 weeks based on patient response, up to daily if needed.
- SQ infusions: Anectdotal dosing is 2-8ug/kg/min over 48 hours, but will depend on device.
- IV infusions: Length of exposure might be important and practitioners typically aim for at least 4 hours of infusion time. Some protocols include an optional 0.5mg/kg bolus given very slowly and then 2ug/kg/min up to 8-10 ug/kg/min based on patient response.
- Frequency: Infusions or more frequent injections may be necessary in the initial treatment of central sensitization and it is important that a robust multimodal pain management plan be in place to maximize comfort and slow the windup process from restarting.

5. Clinical Experience

- Anectodatal reports of improved comfort after using both intermittent SQ subanesthetic ketamine injections & SQ subanesthetic ketamine infusions seem very promising in patients with central sensitization.
- Ideal candidates: Chronic pain patients with hyperalgesia, allodynia, referred pain, anxiety, depression, increased noise phobia, and who are resistant to standard pain treatment.
- Side effects: (usually sedation, dysphoria) seem to be rarely reported and resolve with lower doses or discontinuation. Caution is recommended with known arrhythmias and increased intracranial or intraocular pressures. Lower doses are recommended in renal disease due to decreased clearance.

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