

# Should ketamine be used as a regular analgesic for patients with chronic pain?

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The N-methyl-D-aspartate (NMDA) receptor antagonist ketamine is a powerful analgesic that has been used in the treatment of acute and chronic pain. Its use may be limited by its side-effect profile. This article will explore the possible use of ketamine as a regular prescription on an outpatient basis for patients suffering with chronic pain.

### ARGUMENTS FOR USE OF KETAMINE

Temporal summation or 'wind up' is a phenomenon, which occurs when repeated stimulation of an area of the skin by a constant intensity stimulus results in hyperalgesia. Ketamine inhibits temporal summation in the CNS via its action at the NMDA receptor.

Current therapy for patients with chronic pain using ketamine tends to be limited to episodic intravenous infusion of small doses set a few weeks apart. Most physicians using this technique regard it as an effective and safe way to regularly administer ketamine. The drawback of administering it in this fashion is that the patient may experience a peak effect of the drug during and immediately after the infusion, which may be associated with side effects, and a subsequent trough in the days to weeks before their next dose during which time they may face an exacerbation of the chronic pain. This also demands a considerable investment in scarce hospital resources which may be avoided by using ketamine as a regular oral dose in the home setting.

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Ketamine has also been used as an adjuvant to opioid analgesia in the treatment of refractory cancer pain, as described in a Cochrane review by Bell et al (2003). As it acts on a different receptor type within the CNS it may be used as an opiate-sparing drug or in patients who have developed a tolerance to opiates.

Furthermore other NMDA receptor antagonists such as amantadine have been prescribed for patients as a regular dose given to outpatients, demonstrating that there may be a role for this class of drug in this setting.

### ARGUMENTS AGAINST USE OF KETAMINE

The side effects of ketamine include tachycardia, hypertension, dysphoria, hallucinations, sedation and salivation. In view of the CNS effects it may be argued that ketamine is an unsuitable drug for use on an outpatient basis as a regular daily or weekly dose taken at home. These effects may also warrant the additional prescription of a benzodiazepine, which may then cause further side effects. Detrimental effects on working, episodic and procedural memory have been shown by Morgan et al (2004). Ketamine should be avoided in patients with a history of hypertension or severe ischaemic coronary artery disease.

Physicians prescribing ketamine should note that it is also a street drug. Thus there is a possibility that it may be misused or sold. This may necessitate careful patient screening via a detailed history of illicit drug use.

When it is taken into consideration that many patients may be unsuitable candidates for regular ketamine taken

at home after being screened by a physician, there may be yet more patients who are unable to tolerate its side effects, leading to poor compliance. This may result in very few patients being effectively treated with ketamine out of all those who may get some potential benefit from the drug.

Tachyphylaxis occurs with repeat doses of ketamine as with many analgesic drugs. This could lead to a gradual increase of dose being needed, thus making the development of side effects increasingly likely.

### CONCLUSION

Ketamine is a powerful analgesic drug that may be used to treat pain that is refractory to morphine or as a sole agent. Its use is limited by its wide range of side effects and its potential for abuse. This may result in a specific group of outpatients who tolerate it well being suitable for long-term treatment. However, daily dosage may give profound relief to these patients, enabling them to reduce the dose of other analgesic medication and improving their quality of life. **HM**

Bell R, Eccleston C, Kalso E (2003) Ketamine as an adjuvant to opioids for cancer pain. *Cochrane Database of Systematic Reviews* Issue 1: CD003351

Morgan CJA, Mofeez A, Brandner B, Bromley B, Curran HV (2004) Acute effects of ketamine on memory systems and psychotic symptoms in healthy volunteers. *Neuropsychopharmacology* 29: 208-18

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