

Introduction

Ketamine, an NMDA antagonist has been shown to be effective in pain relief (1). Previous studies have shown improvement in outcomes in chronic pain patients following ketamine infusions (2,3). Chronic pain is determined in a temporal fashion, with an arbitrary timeframe of 3-6 months, and may be subdivided into nociceptive, inflammatory, neuropathic and dysfunctional categories of pain. In our previous study patients with chronic pain, unresponsive to conventional treatment, demonstrated improved outcomes with outpatient ketamine infusions (4). The purpose of this study is to examine the efficacy of outpatient ketamine infusions in patients with various chronic pain conditions.

Materials and Methods

With IRB approval we examined data on patients undergoing outpatient ketamine infusions. We subdivided patients based on their chronic pain diagnosis into 4 nonexclusive categories: neuropathic pain, generalized pain, chronic postoperative pain, and chronic pain in patients with a psychiatric diagnosis. Patients completed the Brief Pain Inventory (BPI) prior to 1-day or 3-day outpatient ketamine infusions and again two to four weeks after the infusions. We measured pain scores and outcomes related to general activity, mood, walking ability, normal work, and relations with other people, sleep and enjoyment of life.

For data analysis, a random effects mixed model was used to test the time effect (pre- versus post-) for pain and other outcomes, as well as the diagnosis by time interaction. This method accounted for within-subject autocorrelation of the pain scores.

Results

There were 224 patients in the sample: 143 patients with neuropathic pain (64%), 49 with generalized pain (22%), 80 with chronic post-op pain (36%), and 63 with psychiatric diagnoses in addition to chronic pain (28%). There was a significant drop in mean pain level from pre to post infusion ($p < .0001$) for all diagnoses, with the mean pain level dropping from 7.6 (95% confidence interval 6.8 to 8.5) to 6.8 (95% ci 6.0 to 7.7) after adjusting for covariates. The decreases in pain relief amongst the different groups were not significantly different.

General activity significantly improved in patients with chronic post op pain ($p = 0.0062$) and in those with psychiatric diagnosis ($p = 0.0044$). Walking improved significantly in those without chronic postop pain ($p = 0.025$). Work impairment was significantly less in those with neuropathic pain ($p = 0.01$) and in those without psychiatric diagnosis ($p = 0.44$). Sleep impairment was significantly less in those without chronic postop pain ($p = 0.16$).

Summary

Outpatient ketamine infusions significantly improved pain scores in patients with the following chronic pain conditions: neuropathic, generalized, chronic postop pain, and chronic pain in patients with psychiatric diagnosis. Closer analysis shows that improvement in various quality of life measures differed significantly amongst different chronic pain conditions.

Further study with larger sample groups may help elucidate ketamine's broad therapeutic effect in treating chronic pain.

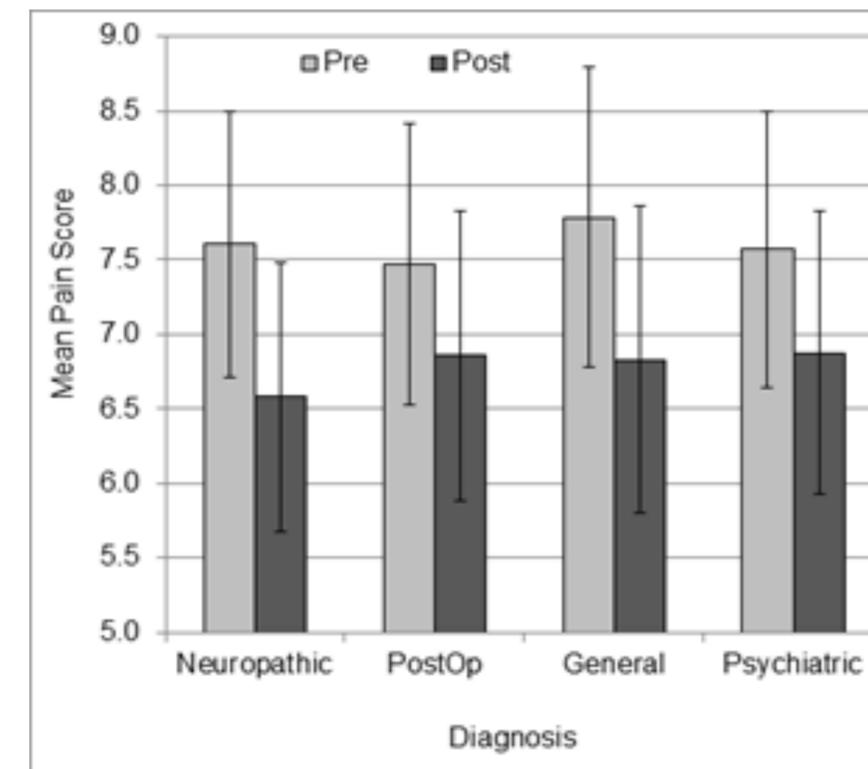


Figure 1: Pre- and Post- ketamine Infusion Pain Scores.
Pain scores prior to ketamine infusion vs. pain scores at follow-up appointment

References

1. Visser E, Schug SA. The role of ketamine in pain management. *Biomed Pharmacother.* 2006;60(7):341-8. doi: 10.1016/j.biopha.2006.06.021. PubMed PMID: 16854557.
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