Intravenous Ketamine Infusion for Treatment of Refractory Migraines

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INTRODUCTION

- Chronic and refractory migraine disorders are often challenging for healthcare providers and patients to manage
- Limited options currently exist for the treatment of refractory migraines
- Recent data from small case studies have suggested that ketamine, an NMDA receptor antagonist, may have potential analgesic properties in these patients at subanesthetic doses

OBJECTIVES

Primary Objective:

- To characterize the use of intravenous ketamine infusions for refractory migraine and report the effect on patient reported pain scales

Secondary Objectives:

- Characterize adverse events reported with intravenous ketamine infusions for refractory migraines

METHODS

Study Design: Single-center, retrospective chart review

Committee Approvals: VCU Institutional Review Board, P & T Committee

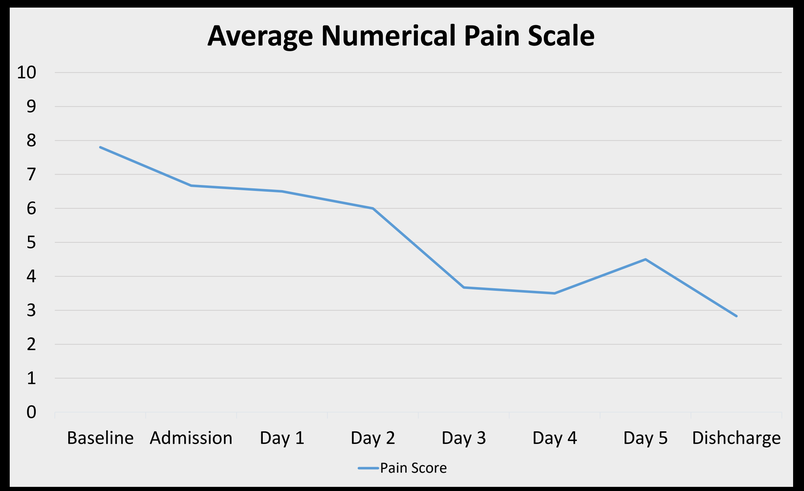
Inclusion Criteria: Any patient admitted to the intensive care unit at VCU Health with continuous intravenous (IV) ketamine ordered for treatment refractory migraines

Statistical Analysis: Descriptive statistics

Patient Demographics (6 encounters)	
Male, n (%)	4 (67)
Age, median (range), years	47 (36-51)
Weight, median (range) kg	81.1 (51.2-87.2)
Age of migraine disorder onset, median (range), years	32 (20-36)
Duration of Illness, median (range), years	18 (1-23.5)
Baseline numerical pain scale, median (range)	9 (5-10)

RESULTS

- Patients had a range of 2-6 comorbid conditions and failed between 7-10 other migraine treatments prior to admission
- Median pain score on admission was 6.5
- Fifty-percent of patient encounters (n = 3) achieved the goal pain score of ≤ 3 for 8 hours, and all encounters were acute responders (a decrease in pain score of ≥ 2 during infusion)
- Pain scales decreased by an average of 3.83 points from admission to discharge
- Three (50%) encounters had available follow-up data. Of those only one (0.17%) had a sustained pain decrease of ≥ 2 at the first follow-up visit
- The most common adverse effect was nausea (n = 4, 67%)
- One patient's infusion was discontinued after 1.8 days due to respiratory failure resulting in intubation



RESULTS

Ketamine Infusion Data (n = 6)	
Average starting rate (mg/kg/hr)	0.129
Average infusion rate (mg/kg/hr)	0.356
Average maximum infusion rate (mg/kg/hr)	0.475
Mean infusion duration (h)	69

DISCUSSION

- Continuous IV ketamine infusion at subanesthetic doses led to a clinically significant decrease in pain scores in most patients
- The infusions were associated with short-term improvement in 5 of the 6 patient encounters and long-term improvement in 1 of the 6 encounters
- Concomitant use of other analgesic and anti-migraine medications during the infusion may also have played a role in the clinical improvement of these patients
- Although only one patient had a significant safety event, due to the small population size, the incidence and implications of this cannot be truly interpreted given the current data
- No other serious adverse events were reported and nausea was the only minor adverse effect attributed to the ketamine infusions in these patients
- Larger randomized controlled studies will be necessary to further elucidate and generalize these results

LIMITATIONS

- Retrospective design
- Lack of follow-up data
- Small patient population
- Inconsistencies in charting of side effects

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