Adjuvant low-dose ketamine for pediatric sickle cell vaso-occlusive episodes in the emergency department

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Abstract

Background: Sickle cell disease (SCD) vaso-occlusive episodes (VOEs) are managed primarily with opioids that can lead to dependence and tachyphylaxis. Ketamine mitigates opioid tolerance and appears efficacious for all-cause pain in the adult emergency department (ED). We hypothesized that ED treatment with low-dose adjuvant ketamine (LDK) for acute VOE is safe and decreases opioid usage in children and young adults with SCD. Procedure: In this exploratory study, patients with SCD aged 10-25 years presenting to UCSF Benioff Children's Hospital Oakland ED with VOE were eligible for a single 0.2 mg/kg IV dose of LDK, after receipt of the first IV opioid dose. Safety, tolerability, and subjective experience were assessed prospectively. Pain scores, length of stay, likelihood of discharge from the ED, time to 50% pain reduction, and morphine equivalent usage (mg/kg/h) for the intervention visits were compared to the patient's historical data within the year prior. Results: No serious treatment emergent adverse events occurred in the 62 enrolled patient-encounters in 25 individual patients. LDK decreased morphine equivalent usage by 0.06 mg/kg/h (15%; 95% CI [2.3%, 28%], p=0.004), but did not affect pain scores on discharge, time to or likelihood of 50% pain reduction, or likelihood of discharge. Subjectively, when assessed in their first LDK encounter, the majority of patients reported faster pain relief (60%) and desired LDK in the future (68%). Conclusions: LDK for SCD VOE in the pediatric ED is safe, subjectively improves the experience of pain, and decreases opioid usage. Larger studies are needed to confirm these findings.

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