A Prospective Randomized, Double-Blind Trial Comparing Intravenous Push Dose of Low Dose Ketamine to Short Infusion of Low Dose Ketamine for Treatment of Moderate to Severe Pain in the Emergency Department

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Objective: To compare adverse effects and analgesic efficacy of low-dose ketamine for acute pain in the emergency department (ED) administered either by single intravenous push (IVP) or short infusion (SI).

Methods: Patients aged 18-65, presenting to ED with acute abdominal, flank, or musculoskeletal pain with initial pain score ≥ 5, were randomized to ketamine 0.3 mg/kg by either IVP or SI with placebo double-dummy. Adverse effects were evaluated by Side Effects Rating Scale for Dissociative Anesthetics (SERSDA) and Richmond Agitation Sedation Scale (RASS) at 5, 15, 30, 60, 90, and 120 minutes post-administration; analgesic efficacy was evaluated by Numerical Rating Scale (NRS).

Results: Forty-eight patients enrolled in the study. IVP group had higher overall rates of feeling of unreality on SERSDA scale: 92% versus 54% (difference 37.5 %; p = 0.008; 95% CI 9.3 - 59.5 %). At 5 minutes median severity of feeling of unreality was 3.0 for IVP versus 0.0 for SI (p = 0.001). IVP also showed greater rates of sedation on RASS scale at 5 minutes: median RASS -2.0 vs. 0.0 (p = 0.01). Decrease in mean pain scores from baseline to 15 minutes was similar across groups: 5.2 ± 3.53 (95% CI 3.7 - 6.7) for IVP; 5.75 ± 3.48 (95% CI 4.3 – 7.2) for SI. There were no statistically significant differences with respect to changes in vital signs and need for rescue medication.

Conclusion: Low-dose ketamine given as a short infusion is associated with significantly lower rates of feeling of unreality and sedation with no difference in analgesic efficacy in comparison to intravenous push.