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Low dose ketamine vs morphine for acute severe vaso occlusive pain in children: A randomized controlled trial (NCT02434939)

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Background: Acute pain in sickle cell disease is difficult to manage. Opioids, the mainstay in pain management are associated with tolerance and side effects. Ketamine is an affordable, safe and available option. Ketamine at sub anesthetic doses has analgesic effects that have been used in pain management, however data on its use in sickle cell crises is limited in our setting.

Objectives: To compare the maximum change in numeric rating scale (NRS) pain scores in patients receiving low-dose ketamine (LDK) or morphine (MOR) for acute severe VOC pain in the sickle cell day care center.

Methods: In a double blinded trial, we randomly assigned children 7 to 18 years with severe painful crisis in the Mulago sickle cell center to receive either IV ketamine 1mg/kg or IV morphine 0.1mg/kg over 10 minutes. Primary end was maximal percentage change in NRS pain score.

Results: 240 patients were enrolled (LDK 120, MOR 120). The groups had similar characteristics at baseline and NRS scores (8.9 vs 9.2). LDK was comparable to MOR in maximum change in NRS scores 66.4% vs 61.3 % (MD5.5; 95% CI-2.2 to -13.2; p=0.18). Time to maximum reduction in NRS score was 19.8 minutes and 34.1 minutes for LDK and MOR respectively. LDK patients were 11.3 times likely to develop side effects, though non-life threatening (37.5% vs3.3%).

Conclusion: IV LDK at 1mg/kg provides comparable analgesic effect as IV MOR in acute treatment of severe painful sickle cell crisis in children, however has transient, non-life-threatening side effects.

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