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High and low dose hydromorphone via Patient-Controlled Anesthesia (PCA) pump and Intravenous Push (IVP) in the control of pain in adult patients with a diagnosis of Sickle Cell Disease (SCD) with pain crisis

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Patients with Sickle Cell Disease (SCD) are often treated with hydromorphone for sickle cell pain. These patients were treated with high dose hydromorphone intravenous and Patient Controlled Analgesia (PCA) to evaluate if high dose hydromorphone controls pain as effective as low to moderate dose.

A retrospective chart review was conducted looking at the usage of hydromorphone Intravenous Push (IVP) and Patient Controlled Analgesic (PCA). Data collection from Care Cast; Electronic Medical Record (EMR) on pain scores, hydromorphone dosage, route, length of time used. Variables monitored; pain scores, daily hydromorphone dose. Fifty percent decrease in pain scale in the first three days was considered adequate pain control. The efficacy of the hydromorphone was measured by comparing the downward trending of the usage and pain scores documented.

The data highlighted that there is no significant decrease in pain scores from day 2 to day 3 (p -value = 0.107) despite a large increase in hydromorphone dose. In addition, there was no statistically significant correlation between pain scores and hydromorphone dose on day 3 of admission (p -value = 0.064) while on days 1 and 2 there were significant correlations with p -values of 0.033 and 0.002 respectively. This suggests that the large increase of hydromorphone on day 3 did not yield a significant decrease in pain and therefore did not provide the additional treatment that would be expected with the increase in medication.

Keywords: Sickle Cell Disease, Hydromorphone, Pain, Opioids, Pain Control.

Recent publications

1. Arnstein P (2010) Clinical coach for effective pain management: The nature of pain (1 st ed.). Philadelphia: F.A. Davis Company.
2. Collins J, et al. (1996) Patient-controlled analgesia for mucositis pain in children. A three-period crossover study comparing morphine and hydromorphone; The Journal of Pediatrics.
3. Hecker BR, Albert L (1988) Patient-controlled analgesia: a randomized, prospective comparison between two commercially available PCA pumps and conventional analgesic therapy for postoperative pain. Pain 35: 115-150.

Biography

Arlette Paul works in pain management but is specialized in sickle cell and chronic pain. She developed a fund for research during her initial encounter with sickle cell patients who presented to the comprehensive sickle cell clinic at the metropolitan hospital in New York City. Her current role as a pain consultant is to assess, evaluate, diagnose, make recommendations for in-patient who are presenting with acute and chronic exacerbation of pain. She also participates in performance improvement research activities and is a Principal Investigator. Her clinical expertise demonstrates leadership in multiple areas of practice; inter-disciplinary team, hospital pain team, nursing leadership, and mentoring.

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