METHADONE USE IN THE PERIOPERATIVE SETTING FOR ACUTE PAIN MANAGEMENT: A MULTICENTRE AUDIT OF CLINICAL PRACTICE

Byung Kyu Jun[1], Amy Skiller[1], Amanda Griggs[1], Lucia Chinnappa-Quinn[1, 2], Raja Rengasamy[1]

[1]*Department of Anaesthesia and Perioperative Medicine, Maroondah Hospital, Eastern Health, Ringwood East, VIC, Australia*

[2]*Centre for Health Brain and Ageing, Discipline of Psychiatry and Mental Health, School of Clinical Medicine, University of New South Wales, Sydney, NSW, Australia*

The use of methadone has become popular in the perioperative context due to its multi-modal analgesic properties, which are beneficial in reducing postoperative opioid consumption and pain scores [1]. However, clinicians must also balance the potential adverse effects, namely respiratory depression and arrhythmia [2]. Furthermore, systematic reviews on the topic report heterogeneous dosing, ranging from 0.1-0.3mg/kg [3]. As the perioperative use of methadone increases in our health network, we aim to undertake an audit of perioperative methadone administration across two hospitals to document adverse events, clarify its therapeutic dosing, and work towards a guideline for its administration.

Methods

Ethics was approved through the Eastern Health Office of Research and Ethics (QA24-124-111982). All S8 registers from operating suites at Maroondah and Angliss Hospital were screened for the dispensation of intravenous methadone, from 19/09/2018-06/01/2025. All identified patients were included. All authors gathered data from electronic medical records and scanned clinical patient files, including demographics, surgical data, comorbidities, risk factors for pain, and medications. Primary data points included methadone dose, adverse events, time to first opioid administration, postoperative opioid oMEDD (oral morphine equivalent daily dose) and pain scores in recovery, at 1-6hrs, 6-12hrs, 12-24hrs, 24-48hrs, and 48-72hrs. Mean (± standard deviation) and median (IQR) were calculated for continuous and categorical variables respectively using R (https://r-project.org/).

Results

In total, 75 patients were identified with median age 51.48 years (21.63).

The mean intraoperative methadone dose was 11.99mg (±4.56), and 0.15mg/kg (±0.06). In recovery, the median pain score was 0.44 (2.98), with 41 patients (54.7%) requiring no opioids.

Median time to first opioid administration was 70 minutes (195). Median pain score was 0.75 (2.45) at 0-6hrs post-recovery, 1.67 (3) at 6-12hrs, 2.37 (2.37) at 12-24hrs, 2 (2.43) at 24-48hrs, and 1.4 (2.97) at 48-72hrs.

The mean postoperative opioid oMEDD was 4.86mg (±8.17) at 0-1hrs post-recovery, 19.71mg (±42.77) at 1-6hrs, 17.11g (±17.3) at 6-12hrs, 36.58mg (±43.97) at 12-24hrs, 48.65mg (±66.47) at 24-48hrs, and 38.3mg (±64.58) at 48-72hrs.

In recovery, there were no cases of reduced respiratory rate (RR<8), two cases (2.7%) of SpO2<90% despite supplemental O2, two cases (2.7%) of bradycardia (HR<50), five cases (6.67%) of SBP<90mmHg, and no cases of acute changes in conscious state. The mean QTc interval on 12-lead ECG preoperatively was 435.07msec (±30.77) and postoperatively was 445.04msec (±26.75) (p=0.199, 95% CI [-25.35, 5.41]).

Discussion

In our centres, the mean intraoperative methadone dose was at the lower end of the range reported in literature.

Pain scores and postoperative opioid requirements were lower at 0-12 hours compared with 12-48 hours. Although there were no cases of adverse events attributable to the administration of methadone in recovery, there is a potential for adverse effects with increasing doses.

Overall, we highlight that the use of methadone perioperatively is safe but requires further investigation to provide an organizational guideline. Ongoing studies will be performed to further elucidate its safety, efficacy, and optimal dosing.

References

[1]Machado, F.C., et al. (2019) AnesthAnalg, **129**(6):p1723-1732

[2]Pan, S., et al. (2023) AnesthAnalg, **137**(1):p72-75

[3]D'Souza, R.S., et al. (2020) Pain, **161**(2):p237-243