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Lidocaine continuous incision in pediatric patients after open heart surgery

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ABSTRACT

Continuous infusion of lidocaine through the incision has been suggested as adjunctive therapy in the management of postoperative pain in adult patients. The aim of this study was to determine the efficacy and safety of continuous subcutaneous infusion of lidocaine in pediatric patients following open-heart surgery. All patients who received a subcutaneous lidocaine infusion at the midline of the sternum incision after open heart surgery for 2 consecutive years were included in the study. A historical patient group was used as a control group. Demographic variables (age, height, and surgical procedure), variables related to sedation and analgesia (COMFORT and analgesia scale, drug dose and duration), and complications were analyzed. Record 106 patients in the lidocaine infusion group and 79 patients in the control group were included. Incisional analgesia was effective in treating pain by reducing the dose and duration of intravenous fentanyl administration (odds ratio (OR) 6.26, 95% confidence interval respectively. The reduction in fentanyl consumption was greater in children over two years of age. Adverse events were observed in three children (2.8%): all of them had decreased consciousness and one of them also had seizures. Two of these three patients had lidocaine levels above 2 mcg/mL. Continuous infusion of lidocaine into the incision is effective for the treatment of pain following open heart surgery.

Keywords: Appendix Surgery; Arthroscopic Knee; Colorectal Surgery; Endometriosis Surgery

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INTRODUCTION

This procedure has reduced the need for intravenous analgesia in pediatric patients undergoing midstream incision. Despite the low incidence of adverse events, neurological status and blood lidocaine levels should be monitored in all patients. Adequate postoperative analgesia is essential, especially after sternotomy in pediatric patients. Pain management in the postoperative period includes intravenous analgesics such as opioids, non-steroidal anti-inflammatory drugs, metamizole and paracetamol [1]. However, in recent years, several authors have proposed a multimodal approach that combines intravenous drugs with local techniques such as epidural, nerve block, or local anesthesia. Continuously into the incision [2]. to improve the analgesia and analgesic effect. Reduce side effects. Incisional analgesia is the continuous infusion of a local anaesthetic into the subcutaneous tissue of a surgical wound through a catheter placed during surgery [3]. Several studies performed in adults show the effectiveness of incisional analgesia in reducing postoperative pain in different types of surgery, including open heart surgery [4]. However, there is limited evidence for its use in pediatric patients. The purpose of our study was to determine the efficacy and safety of continuous subcutaneous infusion of lidocaine in pediatric patients following open heart surgery [5]. A prospective observational study was performed that included all patients who received lidocaine infusion through an incision into the midline incision after cardiac surgery who were admitted to a pediatric intensive care unit (ICU). PICU) for two consecutive years. A total of 106 patients were enrolled and classified according to the RACHS1 (Risk Assessment for Congenital Heart Surgery) scale [6]. Outcomes were compared with a historical control group of 79 non-injured patients admitted to the hospital following cardiac surgery between January 1, 2011 and December 31, 2011 [7].

DISCUSSION

A catheter is inserted through the surgical incision during surgery after closure of the sternum cut. An elastomeric infusion pump was used to infuse 0.5% lidocaine [8]. The infusion rate was adjusted for the patient's weight. The following demographic variables were collected: age, sex, type of heart disease and surgery, length of stay in PICU, operating room extubation (OR), duration of breathing machine (in hours), dose and duration of incisional lidocaine administration, lidocaine-related complications, concomitant intravenous sedation with midazolam or

protocol, and concomitant intravenous analgesia with fentanyl, metamizole or paracetamol [9]. Specific scales were used to determine sedation (COMFORT scale) [Data analyzed using IBM SPSS Statistics 19 program [10]. Qualitative variables are expressed as percentages and quantitative variables are expressed as medians and interquartile ranges (IQRs), as the variables do not follow a normal distribution. The chi-square test was used to compare qualitative variables and the Mann-Whitney test to compare the mean between groups. Values less than 0.05 were considered statistically significant. A multivariate analysis with logistic regression adjusted for age, RACHS1 (Risk Adjusted for Congenital Heart Surgery) score, and operating room extubation. An age stratified analysis was also performed, with a threshold of two years. One hundred and six children were included in the study. Median age was 63 months (IQR 35-98 months) and 21.7% were under two years of age. 90 patients (84.1%) were extubated after surgery in the operating room. 86% of patients admitted to a mechanically ventilated PICU hospital were extubated within the first 24 hours of admission. The mean duration of intravenous lidocaine infusion was 48 hours (IQR 48-72). The mean infusion rate was 3 ml/hr (IQR 2-5 ml/hr). Lidocaine blood levels were determined between 12 and 48 hours after admission in 58 patients. Blood levels were above 1.5 mcg/ml in 18 patients (31%), but none of them had levels above 5 mcg/ml. None of the patients had liver dysfunction. Six patients (5.6%) had complications related to analgesia. Three patients had problems with catheter misplacement and peritubular leaks leading to early catheter removal.

CONCLUSION

Three other patients (2.8%) had neurological complications: A 4-month-old infant presented with decreased consciousness and tonic-clonic seizures. An 11-month-old patient presented with decreased consciousness. Both had elevated serum lidocaine concentrations (3.8 and 2.4 mg/dl, respectively). Cranial ultrasonography and 12-lead EEG were normal in both patients and neurologic findings disappeared after surgical analgesia was discontinued. The third patient, a 17-year-old male, presented with acute delirium, but was considered unrelated to incisional analgesia because the infusion had been stopped several days earlier and the lidocaine blood level was 1.1 mg/dl. No hemodynamic side effects were observed during the study. This study aimed to assess the need for BMI as a stratification factor for patients in PAS clinics. The results of this study demonstrate that surgical grade rather than BMI is an independent risk factor for global complications. When the cohort was stratified by surgical grade, BMI remained an insignificant factor in overall complications. Currently, there is conflicting evidence about the importance of BMI as a risk factor for postoperative complications. Evidence suggests that obese patients undergoing surgery for an indication for malignancy have a higher risk of complications. However, this increased risk was not observed in patients undergoing surgery for a benign indication. These results demonstrate that obese patients undergoing surgery for an indication for malignancy may need to be seen in high-risk clinics. A systematic review of patients undergoing laparoscopic colorectal surgery concluded that BMI was not a predictor of increased incidence of postoperative complications or length of hospital stay.

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