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The profile and outcome of neonates presenting for exploratory laparotomy for necrotising enterocolitis at a South African academic hospital

Abstract

Introduction:

The anaesthetic management of the neonate presenting for emergency surgery can be challenging. Current evidence has limited data to advise best practice. The aim of this study was to describe the patient profile, anaesthetic management and outcome of neonates presenting for emergency laparotomy for necrotising enterocolitis (NEC).

Methods:

A retrospective, descriptive study was conducted of surgical and anaesthetic neonatal records at Chris Hani Baragwanath Academic Hospital. Records of all neonates presenting for exploratory laparotomy for NEC from 1 January 2019 to 31 December 2020 were included in the study. Categorical variables were described using frequencies and percentages. Continuous parametric variables were described using means and standard deviations, non-parametric variables were described using medians and interquartile ranges. In records with incomplete data the total number of complete records were used to calculate mean and medians. Factors associated with 28-day mortality were compared with logistical regression analysis. A p- value of < 0.05 was considered statistically significant.

Results:

A total of 48 records were analysed. The mean gestational age and weight at birth of the neonates were 31.7 (SD ± 3.5) weeks and 1415 (IQR1199-1800) grams respectively. The mean day of life at presentation to surgery was day 8 (IQR6.0-13.3) . Intraoperatively, 9 (18.8%) cases received Sevoflurane, while 18 (37.5%) received a combination of fentanyl and midazolam. Blood products were used in 35 (73.0%) cases. Preoperative inotropic support was required in 22 (45.8%) cases and a further 6 (12.5%) cases required intraoperative inotropic support. The overall 28-day mortality rate post laparotomy for NEC was 27 (56.3%) cases. Logistical regression analysis showed a significant association between mortality and four factors: Firstly, anaesthesia administered by a consultant anaesthesiologist (OR 3.81; CI: 1.13 to 12.90; p=0.03); secondly, surgery <2 hours (OR 4.00; CI: 1.14 to 14.09; p=0.03); thirdly, surgery performed during working hours (OR 3.95; CI: 1.05 to 14.85; p=0.04) and lastly surgery performed in the neonatal intensive care unit (OR 4.00; CI: 1.14 to 14.09; p=0.03).

Conclusion:

This study described not only the patient profile of neonates presenting for exploratory laparotomy for NEC but also the variations in anaesthetic management of these patients. The higher mortality in a developing country in comparison with developed countries was highlighted. In addition, further analysis demonstrated possible associations between mortality and anaesthesiologist level of expertise; duration of surgery; time of day of surgery; and location of surgery.