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SAFETY AND EFFICACY REVIEW OF CONTINUOUS LEVOBUPIVACAINE INFUSION VIA WOUND INFILTRATION CATHETERS FOR NEONATES AND INFANTS UNDERGOING MAJOR ABDOMINAL SURGERY

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Background

Continuous infusion of local anaesthetic (LA) via wound infiltration catheters is well recognised as safe and effective in both adult and paediatric populations (1). In neonates, it offers a useful analgesic adjunct to reduce post-operative requirement for systemic opioids which can complicate the post-operative period with side effects and delay post-operative recovery. It is also a safer alternative post-operative analgesic alternative to techniques that carry higher risk of complications such as continuous epidural infusions (2). Although several studies have demonstrated the safety of continuous LA infusions in neonates (3), there are no sufficiently powered studies that definitively show the use of continuous LA infusions significantly reduces the post-operative requirement of systemic opioids for neonates or infants (2).

Design

A prospective, observational study conducted at Birmingham Children's Hospital, UK.

Aims

1) Ascertain the systemic morphine requirement delivered by Nurse Controlled Analgesia (NCA) in the first 48 hours post-operatively of neonates and infants undergoing major abdominal surgery.

2) Measure the incidence of complications from the infusion of 0.125% Chirocaine through a wound catheter.

Methodology

All patients <3 months of age at time of surgery undergoing major abdominal surgery between June 2020 to August 2022 were included. Nurse controlled intravenous morphine requirements and pain scores were noted at 24, 48 and 72 hours post-operatively. Incidence of catheter leakage, skin integrity, wound infection and wound healing was also recorded.

Results

A total of 16 patients data were analysed. Median age of patients was 1 month, 19 days [range 4 days – 2 months 12 days] and median weight was 3.47kg [IQR 2.8-4]. Surgical operations performed were

9 Kasai and 7 laparotomies. The Median systemic morphine requirements on Days 0, 1 and 2 were 82.4 mcg/kg [IQR 51.1-97.4], 200 mcg/kg [IQR 127-219.5] and 205.1 mcg/kg [IQR 150.4-235.1]. The median total morphine requirement in the first 48 hours post-operatively was 377.7 mcg/kg [IQR 322-358]. Opioid requirement in the Kasai group was higher than that in the laparotomy group and some patients in the laparotomy group required few or no boluses on top of the background 100 mcg/kg/ 24hrs background morphine NCA infusion. No major complications were directly attributed to the wound catheters or LA infusion and no delayed wound healing noted.

Discussion

These results reveal a notable reduction in requirement for systemic opioids post operatively with use of continuous LA infusion via wound infiltration catheters. In our institution, systemic morphine is no longer routinely prescribed post-operatively by the anaesthetist for major abdominal surgery. Instead, for some neonate and infant laparotomies, post-operative IV opioids can be replaced with NG Oramorph or Codeine PR as required. LA continuous infusions are safe with no major complications observed in this cohort of cases.

References

1) Krylborn J, Anell-Olofsson ME, Bitkover C, et al Plasma levels of levobupivacaine during continuous infusion via a wound catheter after major surgery in newborn infants: an observational study. Eur J Anaesthesiol 2015;32:851–6.

2) Popat H, Angiti R, Jyoti J, et al Continuous local anaesthetic wound infusion of bupivacaine for postoperative analgesia in neonates: a randomised control trial (CANWIN Study) BMJ Paediatrics Open 2022;6:e001586. doi: 10.1136/bmjpo-2022-001586