Safety and Efficacy of Single Dose Epidural Morphine in Neonates and Infants

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Introduction: If continuous epidural infusion appears not appropriate and single dose epidural local anesthetic is not sufficient for postoperative analgesia in neonates and infants, prolonged postoperative analgesia from epidural adjuvants may be beneficial. We reviewed the use of single dose epidural preservative free morphine in neonates and infants to evaluate efficacy and safety.

Methods: After Institutional Review Board approval, charts were reviewed of those patients known to have received single dose epidural preservative free morphine since January 2006. Demographic data, indication for single dose narcotic over epidural catheter, duration of analgesia and need for postoperative analgesics, vital signs, side effects and perioperative course were reviewed.

Results: Seven patients were identified between ages 4 days and 8 months. One patient with narcotic tolerance stayed intubated for one week postoperatively. One patient who was transported immediately postoperatively to another hospital was extubated on postop day 1. The remaining 5 patients were extubated in the OR. One patient had an epidural catheter placed postoperatively due to an intraoperative change in surgical plan. Most required additional analgesics, but overall they were very comfortable. No extubated patients had respiratory problems.

Age at birth/ surgery	**Weight (kg)**	**Diagnosis**	**Surgery**	**Morphine Dose/ Local anesthetic**	**Extubation**	**Repeat caudal with local**	**24 hour Narcotic Dose**
39 wk/9days	3.1	Hirschprung's	Pull-through	0.2 mg in 2.5 ml of 0.25% bupivicaine	OR	Yes	0.15 mg Morphine
39 wk/4mo	6.3	VACTERL	Anorecto-plasty	0.3 mg in 5 ml of 0.25% bupivicaine	OR	Yes	0.25 mg Morphine
37 wk/6mo	7.3	Fibrosarcoma	Resection	0.35 mg in 7 ml of 0.25% bupivicaine	OR	Epidural	Epidural only
40 wk/7days	3.4	Hirschprung's	Pull-through	0.2 mg in 3.4 ml of 0.125% bupivicaine	OR	Yes	Acetamin-ophen only
37 wk/ 8 mo	8.6	GERD	Nissen/ GTube	0.85 mg in 4 ml of PFNS	POD 6	No	12.2 mg Morphine
40 wk/ 4 d	3.2	Sacrococcygeal teratoma	Resection	0.2 mg in 2.5 ml of 0.25% bupivicaine	OR	Yes	0.08 mg Morphine
35 wk/ 25 d	2.4	NEC/bowel obstruction	Bowel resection	0.12 mg in 2.5 ml of 0.125% bupivicaine	POD 1	No	7.5 mcg Fentanyl

Discussion: In neonates and small infants, acetaminophen may be insufficient for immediate postoperative analgesia, NSAIDS may be contraindicated, and systemic narcotics may carry a risk of respiratory depression. Epidural analgesia has been advocated, however, epidural catheters for continuous analgesic infusion may be not advisable in some patients and single dose epidural local anesthetics may have duration of analgesia that is too short. Epidurally administered preservative free morphine offers a longer duration of analgesia. Most reports are on its use in older children. We found a

dose of 50-70 mcg/kg preservative free epidural morphine, with or without local anesthetic, to effectively and safely assist in postoperative pain management of infants and neonates following surgery.

Conclusion: In neonates and infants, epidurally administered preservative free morphine 50-70 mcg/kg was a useful analgesic for postoperative pain. Additional pain medication became necessary within 24 hours of epidural duramorph dosing. We observed no respiratory depression, however we recommend ICU monitoring for at least 24 hours after its administration, especially if additional narcotic analgesics are required.

References: Krane et al. Anesthesiology 1989; 71: 48.