

Extradural buprenorphine suppresses breast feeding after Caesarean section

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Summary

Satisfactory pain relief with postoperative extradural bupivacaine increases the amount of breast feeding after Caesarean section. To investigate the effect of extradural buprenorphine, we have evaluated the amount of breast feeding and the gain in infant weight for 11 days after Caesarean section in patients who received continuous extradural bupivacaine with or without buprenorphine. Extradural buprenorphine significantly decreased both measures although there was no significant difference in pain intensity. We suggest that extradural buprenorphine suppressed breast feeding after Caesarean section. (*Br. J. Anaesth.* 1997; **79**: 120–121).

Key words

Anaesthesia, obstetric. Analgesic techniques, extradural. Analgesics opioid, buprenorphine. Pain, postoperative.

Our recent investigation revealed that satisfactory postoperative pain relief with continuous extradural bupivacaine for 3 days after Caesarean section improved the amount of breast feeding and gain in infant weight compared with unsatisfactory pain relief without extradural analgesia.¹ Although extradural opioids are also known to provide satisfactory analgesia after Caesarean section,^{2,3} the effect of extradural opioids on breast feeding has not been evaluated. Extradural bupivacaine has less effect on the neurobehavioural state of the neonate than other local anaesthetics or opioids.^{4,5} Opioids such as pethidine⁶ induce neurobehavioural depression in the neonate. We hypothesized that extradural opioids would suppress breast feeding while providing satisfactory postoperative pain relief. To evaluate the effect of extradural buprenorphine, we measured the amount of breast feeding and gain in infant weight for 11 days in patients who received continuous extradural bupivacaine with or without buprenorphine for 3 days after Caesarean section.

Methods and results

After obtaining approval from the hospital Ethics Committee and written informed consent, we studied two groups of full-term parturients (without co-existing disease) who had undergone elective

Caesarean section under spinal and extradural anaesthesia. Indications for Caesarean section were previous Caesarean section, breech presentation and predicted cephalopelvic disproportion. Patients were allocated randomly to one of two groups to receive extradural bupivacaine alone (control group, $n=10$) or extradural bupivacaine and buprenorphine (buprenorphine group, $n=10$) for postoperative pain management.

All patients were premedicated with metoclopramide 10 mg i.v., 1 h before operation. After the patient received an i.v. infusion of lactated Ringer's solution 1–1.5 litre, the extradural catheter was placed at the T12–L1 or L1–2 interspace, and then 0.3% cinchocaine 1.2–1.8 ml was given intrathecally using a 26-gauge disposable spinal needle into the L3–4 or L4–5 interspace. In the control group, patients were given 0.25% bupivacaine 5 ml extradurally as a loading dose after clamping of the umbilical cord, followed by continuous infusion of 0.25% bupivacaine 0.7 ml h⁻¹ using a disposable balloon-operated infuser (Sure-fuser SFA-0503D, Nipro, Japan) for 3 days for pain relief. In the buprenorphine group, patients were given 5 ml of 0.25% bupivacaine with buprenorphine 200 µg extradurally after clamping of the umbilical cord, followed by continuous infusion of 0.25% bupivacaine 0.7 ml h⁻¹ containing buprenorphine 12 µg ml⁻¹. Diclofenac suppository 25 mg was available on demand for supplementary analgesia in both groups.

All patients started breast feeding when they were able to assume a sitting position after operation, and were encouraged to nurse every 4 h. The weight of milk fed by breast and infant weight were measured for 11 days. To measure the weight of milk fed by breast, each mother weighed her baby on the scales before and after nursing. All babies wore a nappy during nursing to prevent underestimation of the weight caused by urination. Pain intensity both at rest and at coughing was assessed using a visual analogue scale (0 cm=no pain, 10 cm=worst imaginable pain) at three times: 2 h after operation, 1 and 2 days in the morning after operation.

Two-way ANOVA for repeated measures was used for inter-group comparisons. After testing

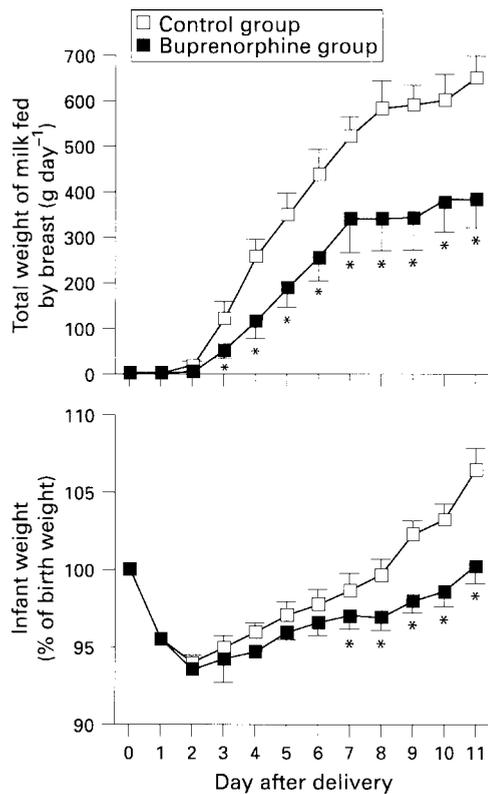


Figure 1 Time course of the extent of breast feeding and change in infant weight, expressed as a percentage of birth weight, after delivery. Patients in the control group ($n=10$) received postoperative pain management with extradural bupivacaine and patients in the buprenorphine group ($n=10$) received extradural bupivacaine and buprenorphine. Data are mean (SEM). *Significantly different from corresponding value in the control group.

significant differences, Fisher's least significant difference test was used to identify significant differences in various pairs of comparisons. The null hypothesis was rejected when $P < 0.05$. All values are reported as mean (SEM).

There were no differences in age, weight or height of parturients, or neonatal birth weight. Number of primiparous/multiparous women was 7/3 in the control group and 6/4 in the buprenorphine group. All multiparous women had previously breast fed successfully. Apgar scores in all neonates at 1 and 5 min were 8–10. Visual analogue scale scores 2 h, 1 and 2 days after operation at rest were: 15.6 (8.2), 15.0 (5.3) and 9.3 (4.4) mm in the control group and 16.0 (6.0), 7.4 (3.8) and 4.1 (2.9) mm in the buprenorphine group. Visual analogue scale scores on coughing were 23.8 (9.8), 36.7 (8.9) and 32.0 (8.6) mm in the control group and 16.0 (7.3), 33.2 (5.1) and 27.5 (7.5) mm in the buprenorphine group. There were no significant differences in scores between the groups. Total dose of diclofenac for 3 days after operation in the buprenorphine group was 5 (5) mg, which was significantly less than that in the control group (25 (8) mg). In the control

group, five patients required diclofenac compared with one patient in the buprenorphine group. Both the extent of breast feeding and gain in infant weight were significantly suppressed in the buprenorphine group compared with the control group (fig. 1).

Comment

We found that extradural buprenorphine added to bupivacaine decreased both the weight of milk fed by breast and gain in infant weight compared with extradural bupivacaine alone, even though it provided satisfactory pain relief and reduced the dose of supplementary analgesics. Buprenorphine, a highly lipid-soluble opioid partial agonist, can easily cross the lipid membrane in the mammary gland from the intravascular space and can affect not only the maternal but also the neonatal central nervous system. We suggest that extradural buprenorphine suppressed breast feeding. Further study is needed to evaluate the effect of other extradural opioids, such as morphine, fentanyl and pethidine, on breast feeding after Caesarean section.

Postoperative pain relief for only 3 days affects breast feeding for up to 11 days after Caesarean section.¹ This study also showed that the effect of extradural buprenorphine for 3 days on breast feeding continued for up to 11 days after Caesarean section. Therefore, maternal postoperative pain relief after Caesarean section could be an important factor in infant development.

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