

TITLE: Epidural Morphine or Butorphanol Augments Bupivacaine Analgesia During Labor

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Introduction: A recent well controlled study demonstrated that addition of epidural fentanyl to 0.25% bupivacaine did not result in statistically significant improvement of analgesia for labor when compared with 0.25% bupivacaine alone (1). The present study was undertaken to evaluate the efficacy of morphine or butorphanol when added to 0.25% bupivacaine for epidural analgesia during labor.

Method: Forty healthy parturients at term were studied. The study was approved by the Institutional Review Board and informed consents were obtained from all patients. Epidural catheters were placed in the usual manner and after prehydration with 500 ml of lactated Ringer's solution a test dose of 2 ml of 0.5% bupivacaine was given and followed by 8 ml of four epidural drugs in a double blind randomized fashion. Each group consisted of 10 patients: group I received 0.25% bupivacaine + 1 mg butorphanol, group II received 0.25% bupivacaine + 2 mg butorphanol, group III received 0.25% bupivacaine + 2 mg morphine, group IV received 0.25% bupivacaine alone. All subsequent epidural injections were with plain 0.25% bupivacaine. Analgesia was evaluated using the Visual Linear Analog Scale, pain intensity scores (0-3) and pain relief scores (0-4). Motor block, fetal heart rate, uterine activity, duration of labor, maternal vital signs and the incidence of side effects were also noted. Neonates were evaluated by Apgar scores at 1 and 5 min, cord acid base status and the Neonatal Adaptive Capacity scores (NACS) at 2 and 24 hours of age. Data were analyzed for statistical significance using analysis of variance and chi-square when appropriate. A P value of less than 0.05 was considered statistically significant.

Results: are presented in the table. Addition of either morphine or butorphanol to 0.25% bupivacaine improved the duration and the quality of analgesia. Duration of first and second stages of labor as well as uterine activity were not significantly different among the four groups. Side effects were minor and did not require any treatment. These included somnolence and in the morphine group 3 patients had mild facial pruritus. All neonates were vigorous at 5

min and had good Apgar scores, cord acid base status and NACS scores. None of these parameters differ significantly among the four groups.

Discussion: Morphine and butorphanol both appear to be useful adjuncts to epidural bupivacaine for analgesia during labor without adversely affecting the mother or the neonate. The combination of local anesthetics and narcotics acts on two different sites of pain pathways (nerve axon and opiate receptors); doses of each agent would then be minimized while analgesia is enhanced. Unintentional intravascular or subarachnoid injection of lower doses of these agents would be accompanied with less adverse maternal and neonatal toxicity. We conclude that adding small doses of either morphine or butorphanol to epidural bupivacaine during labor is safe and effective. Butorphanol may be preferable since none of the patients experienced pruritus.

References

1. Cohen SE, Tan S, Albright G, Halpern J: Epidural Fentanyl/Bupivacaine Mixtures for Obstetric Analgesia. *Anesthesiology* 67: 403-407, 1987.

TABLE

	Group I	Group II	Group III	Group IV
Duration:				
Mean \pm SEM				
Analgesia	139 \pm 11	141 \pm 14	199 \pm 28	96 \pm 6 *
1st stage	192 \pm 47	355 \pm 78	339 \pm 69	232 \pm 54
2nd stage	65 \pm 19	96 \pm 19	80 \pm 24	102 \pm 17
Side Effects (%)				
Hypotension	10	0	30	10
Motor Block	0	0	20	10
Somnolence	90	90	80	80
Pruritus	0	0	30	0
Apgar Scores (%)				
6 or less:				
1 min	10	10	20	0
5 min	0	0	0	0
NACS Scores (%) 35-40:				
2 hrs	62	71	50	63
24 hrs	100	100	100	100

* P<0.01 Compared to the Other 3 Groups