Title: CONTINUOUS INFUSION EPIDURAL ANALGESIA DURING LABOR: A RANDOMIZED, DOUBLE-BLIND COMPARISON OF 0.0625% BUPIVACAINE/0.0002% FENTANYL VERSUS 0.125% BUPIVACAINE

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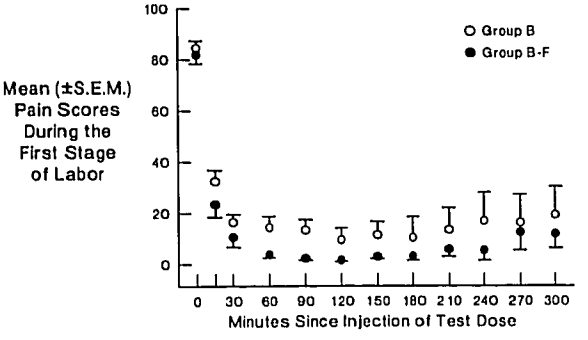
Introduction. Epidural narcotic administration during labor may allow a reduction in the dosage of local anesthetic,[1,2] with less motor block and less risk of local anesthetic toxicity. The purpose of the present study was to compare the continuous epidural infusion of 0.0625% bupivacaine/0.0002% fentanyl versus the infusion of 0.125% bupivacaine.

Methods. The protocol was approved by the institutional review board for research involving human subjects. Written informed consent was obtained from healthy nulliparous women with term singleton fetuses in vertex presentation. When the cervix was 3-7 cm dilated, an epidural catheter was placed via the L3-4 interspace and advanced 3-4 cm cephalad. Each patient received, in sequence: 1) 3 ml of 0.5% bupivacaine with 1:200,000 epinephrine; 2) 6 ml of study solution #1 (group B-F: 0.125% bupivacaine/.0008% fentanyl; group B: 0.25% bupivacaine); and 3) a continuous epidural infusion of study solution #2 at 12.5 ml/hr (group B-F: 0.0625% bupivacaine/0.0002% fentanyl; group B: 0.125% bupivacaine). The infusion rate was increased or decreased to maintain a sensory level of T10. The infusion of study solution was continued until the cervix was noted to be fully dilated. At that time, patients who lacked perineal anesthesia received one or two 5 - ml boluses of study solution #3 (Group B-F: 0.0625% bupivacaine; Group B: 0.125% bupivacaine). Each syringe of study solution was prepared by a hospital pharmacist according to previous randomization and was administered in a double-blind manner. The anesthesiologist asked each patient to indicate her pain score on an unmarked 100 mm visual analogue pain scale (0 = no pain, 100 = worst possible pain) at 15-min intervals X 2 and then at 30-min intervals. Motor block was assessed according to the method of Bromage.[3] Statistical analysis was by Student t-test, Wilcoxon test, chi square, and Fisher exact test as indicated. $P < .05$ was considered significant.

Results. There were 26 women in group B-F and 27 women in group B. The two groups were similar with regard to age, race, socioeconomic status, childbirth preparation, weight, height, gestational age, cervical dilatation before induction of epidural analgesia, and use of oxytocin augmentation. Women in group B-F had less motor block than women in group B at the onset of complete cervical dilatation ($P < .0001$).

	Group B-F	Group B	P
Pruritis	6(23%)	1(4%)	.05
Nausea	5(19%)	8(30%)	NS
Emesis	3(12%)	6(22%)	NS
Urinary retention	13(50%)	8(30%)	NS



	Group B-F	Group B	P
Duration of second stage (min)*	119 ± 63	115 ± 56	NS
Method of delivery			
Spontaneous vaginal	15(58%)	20(74%)	NS
Operative	11(42%)	7(26%)	
Infant weight (gm)*	3462 ± 438	3369 ± 405	NS
One minute Apgar ≥ 7	21(81%)	21(78%)	NS
Five minute Apgar ≥ 7	26(100%)	27(100%)	NS
Umbilical vein pH*	7.31 ± .05	7.31 ± .07	NS
Umbilical artery pH*	7.24 ± .06	7.22 ± .08	NS

*Mean ± S.D.

One infant in each group received naloxone within one hour of birth.

Discussion. Infusion of the bupivacaine-fentanyl combination resulted in analgesia similar to that provided by infusion of a higher concentration of bupivacaine alone. However, the less intense motor block experienced by women in group B-F did not result in a shorter second stage or in a greater frequency of spontaneous delivery.

References.

1. Cohen SE, Tan S, Albright GA, Halpern J: Epidural fentanyl/bupivacaine combinations for labor analgesia: Effect of varying dosages (abstract). Anesthesiology 65:A368, 1986
2. Naulty JS, Malinow A, Hunt CO, Hausheer J, Datta S, Lema MJ, Ostheimer GW: Epidural butorphanol-bupivacaine for analgesia during labor and delivery (abstract). Anesthesiology 65:A369, 1986
3. Bromage PR: Epidural Analgesia. Philadelphia, W.B. Saunders, 1978, p 144