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Title : A COMPARISON OF CONTINUOUS INFUSION EPIDURAL ANALGESIA VS. INTERMITTENT INJECTION TECHNIQUE FOR OBSTETRICAL PAIN RELIEF

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Introduction. Continuous lumbar epidural analgesia during labor and delivery bears the risk of maternal hypotension. This is especially true when intermittent injections are used, because of sudden changes in sympathetic blockade. Since adequate analgesia can diminish the patient's urge to bear down during second stage, analgesia is often allowed to dissipate, depriving the patient of pain relief during this time. Continuous epidural infusion of low-dose local anesthetic via drip or infusion pump has been found to cause fewer episodes of maternal hypotension and to provide more continuous analgesia.[1] Sensory blockade is less profound and the patient's urge to push is less impaired. The purpose of this prospective, randomized study was to compare the effects of continuous infusion of 0.75% 2-chloroprocaine (2CP) with intermittent doses of 2 and 3% (2CP) on maternal blood pressure and duration of effective analgesia in healthy primigravidas during labor and delivery.

Methods. Informed consent was obtained from 28 PS I primigravidas. All patients were hydrated with 600 ml of Lactated Ringer's solution by intravenous infusion prior to placement of the epidural catheter. At a cervical dilatation of 6 cm, a 19 gauge epidural catheter was inserted at L_3-L_4 via a 17 gauge Tuohy epidural needle. The patients were randomly assigned to each of two groups. The study group received a test dose of 7 ml of 0.75% 2CP by epidural injection. After analgesia was established, an infusion of 0.75% 2CP via IVAC infusion pump (IVSP 600) was begun at a rate of 48 cc/hr. The infusion was regulated to maintain a sensory level of T_{10}. The patients were positioned alternately in left or right lateral decubitus positions to prevent one-sided blockade. The control group received a test dose of 2% 2CP and repeated injections of doses of 2 or 3% 2CP as needed to provide analgesia to a sensory level of T_{10}. The blood pressure was measured and the sensory level was tested by pinprick every five minutes for fifteen minutes and every fifteen minutes thereafter. The duration of analgesia, the amount of drug administered during labor and delivery and the presence of effective analgesia during second stage were recorded. The data were evaluated for significance by Student's t-test and chi-square analysis.

Results. Twenty-eight primigravidas were studied. 4 patients (2 in each group) were excluded because of delivery by cesarean section. 2 patients in the study group were deleted from the study because of inadequate pain relief from the infusion. The results are summarized in the Table. No statistically significant differences were found in age, weight, mean systolic blood pressure prior to epidural analgesia, and dose requirements between the two groups. None of the patients in the study group became hypotensive. Hypotension was defined as systolic blood pressure below 100 torr or 20% lower than pre-block level. Four patients in the control group became hypotensive, requiring increased intravenous fluids and ephedrine administration. This difference was significant when tested by chi-square analysis. A significantly larger number of patients in the study group had effective analgesia during second stage than in the control group.

Table 1.

	INFUSION N = 11	INTERMITTENT N = 11	P
Age(yrs)	25.8 ± 5*	25.5 ± 3.8	NS
Weight(kg)	67.5 ± 10.6	72.1 ± 9.4	NS
Syst. BP (mm) before Epidural	112.6 ± 6.8	117.6 ± 10.5	NS
Dose of 2CP in Labor (mg 1 hr)	246.8 ± 168.8	206.4 ± 113.4	NS
Total dose 2CP (mg) Lab.& Del.	1130.4 ± 453	991.8 ± 420	NS
Analgesia During 2nd Stage	9	4	<.05
Hypotensive Episodes	0	4	<.05

*MEAN ± S.D

Discussion. Epidural infusion of 0.75% 2CP in healthy primigravidas resulted in continuous analgesia during labor without affecting maternal blood pressure. These findings agree with results obtained by Zador, et al,[1] with a continuous drip of 0.4% lidocaine.[1] Besides avoiding changes in sympathetic blockade, the continuous infusion of a low concentration produces minimal motor block and allows the patient to change position without assistance. This technique can be recommended for high-risk parturients such as the patient with cardiac disease to minimize the cardiovascular effects of epidural analgesia.

Reference.

1. Zador G, Willdeck-Lund G, Nilsson BA.: Continuous drip lumbar epidural anaesthesia with lidocaine for vaginal delivery. Aeta. Obstet. Gynecol. Scand. 34:31-40, 1974.