A81 (Poster 40)

Is Oxytocin Stimulated Labor More painful than Spontaneous Labor

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This study is a secondary analysis of a randomized investigation (1) of the effects of epidural analgesia during labor compared to patient-controlled intravenous meperidine (PCIA) on cesarean delivery. This secondary analysis is limited to those women who self-administered intravenous meperidine (PCIA). 259 women were identified for analysis comparing women who received oxytocin for augmentation of dysfunctional labor to those who labored spontaneously. Visual analog scores (VAS) for assessment of the intensity of labor pain were obtained before and after epidural analgesia was initiated. Statistical methods included Student's t-test, chi-square, and multiple logistic regression.

Results

	Oxytocin Augmentation	Spontaneous	P-value
Women	57	202	-
Admission to delivery, hours mean ± SD	10.1	4.9	.001
Hourly meperidine dose	30mg	25mg	.18
Meperidine ≥ 50mg/hour	13 (23%)	37 (18%)	.45
VAS score:			
Before analgesia	7.9	8.2	.32
After analgesia	5.4	5.0	.16

Data shown in table are adjusted for parity

We conclude that oxytocin stimulation of dysfunctional labor does not result in more painful labor compared.

1. Anesthesiology 1997;87:487-97

A82 (Poster 41)

Does the PCEA Technique Reduce the Number of Physician-administered "Top-ups" Required to Maintain Analgesia During Labor?

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Introduction: The use of PCEA results in a lower average hourly dose of bupivacaine than does CEI[1]. Few studies have examined the need for physician-administered supplemental doses (top-ups). One study found a "comparable" rate of top-ups in PCEA and CEI groups[2], and one study noted a trend toward fewer top-ups in PCEA patients[3]. We hypothesized that PCEA patients require fewer top-ups than CEI patients when both receive similar dilute local anesthetic and narcotic infusions to maintain labor analgesia.
Methods: IRB approval was obtained. Using our obstetric anesthesia database patients who received PCEA were selected and matched with patients who received only CEI, controlling for body mass index within 1 kg/m^2. All anesthetic records were reviewed. Statistical analysis was performed by two-tailed Student's t test assuming significance at $p<0.05$.
Results: PCEA patients required significantly (p=0.0002) fewer top-ups than the matched CEI group. In addition, the PCEA group had a lower number of top-up doses per hour than the matched CEI group. There was no significant difference in length of infusion time between the two groups.

Parameters	PCEA Group n=117	CEI Controls n=121
Top-up Doses Mean ± SD	0.26 ± .61	0.66 ± .99
Infusion Time (Min)	367 ± 256	328 ± 223
Top-up doses/Hr ($x10^{-4}$)	8.57 ± 25.4	18.9 ± 27.8
Body mass Index Kg/m^2	29.5 ± 4.4	29.7 ± 4.4

Discussion: This retrospective study suggests that the use of PCEA technique does reduce the number of top-ups required to maintain analgesia during labor. These results will be used in the power calculations to design a prospective randomized controlled trial.
References: 1.Can J Anaesth 1988; 35:249-54. 2. Clin J Pain 1996 Mar;12(1):79 3. Anesthesia & Intensive Care. 19(1):32-39, 1991 Feb.

A83 (Poster 42)

Prehydration And Combined Spinal Epidural Labor Analgesia

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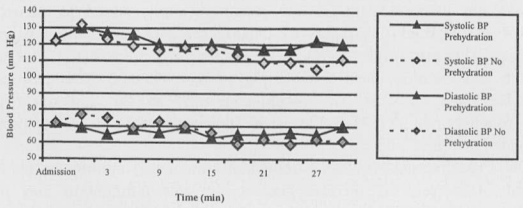
Introduction Intravenous prehydration fails to prevent hypotension after spinal anesthesia.[1] Its role during provision of labor analgesia is unknown.
Methods: With approval of our Human Studies Committee, 21 women with singleton pregnancies gave informed consent and participated this randomized, prospective, blinded study. Women were randomly allocated to receive either 500 mL of intravenous lactated Ringer's solution or maintenance fluids before induction of combined spinal epidural labor analgesia (intrathecal bupivacaine 2.5 mg+ sufentanil 1.2 μg). Blood pressure was measured before and every 3 minutes for 30 minutes after drug injection.
Results: There were no differences between the no prehydration (n=8) and the prehydration (n=12) groups in age, height, weight, gravidity/parity, gestational age, or cm dilation at time of CSE. Blood pressure changes are shown in the figure. More women in the no prehydration group had at least one systolic blood pressure > 20% below baseline (75% vs. 42%, p = 0.3). There also were more episodes of hypotension in the no prehydration group (p = 0.08). Two women, both in the prehydration group, received ephedrine.



Discussion: Prehydration with 500 mL crystalloid appears to decrease, but does not prevent hypotension after induction of labor analgesia with intrathecal bupivacaine/sufentanil. This result is similar to reports that prehydration has only limited ability to prevent hypotension during spinal anesthesia for cesarean section.[1]
Reference: 1. Rout CC et al. Anesthesiology 1993;79:262.

A84 (Poster 43)

Patterns of Nerve Block by Different Combination of Lidocaine-Bupivacaine Mixture.

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Introduction: Mixture of local anesthetic solutions are frequently used in the clinical practice including obstetric anesthesia. Most frequently used drugs for this purpose are 2% lidocaine and 0.5% bupivacaine. The theoretical advantage of this local anesthetic mixture is to take advantage of lidocaine's rapid onset and bupivacaine's prolonged effect. However, unfortunately, the ratio of the mixture of those two drugs were usualy employed empirically without scientific background. The purpose of this study was to find out behaviors of different drug mixtures on the onset and duration of conduction blockade in rat sciatic nerve.
Method: Recordings of A-fiber compound action potentials(A-CAPs) were obtained from isolated sciatic nerves of adult male Sprague-Dawley rats. Nerve sheath of the sciatic nerve was removed and desheathed nerve bundle was mounted on a recording chamber. Single pulse stimuli(0.5 ms, supramaximal stimuli) were repeatedly applied(2 Hz) to one end of the nerve and recordings of compound action potentials were made on the other end of the nerve. Seven different composition of lidocaine-bupivacaine mixtures are prepared(0:6, 1:5, 2:4, 3:3, 4:2, 5:1, 6:0), where basal concentration of lidocaine and bupivacaine are 0.2% and 0.05%, respectively. Baseline value of A-CAP was obtained after the 30 minutes' perfusion with Krebs solution. Then a local anesthetic mixture was perfused for 15 minutes and then Krebs solution was reperfused for the nerve to recover. Onset time was defined as the time elapsed when the amplitude of A-CAP is reduced by 90% compared with that of the baseline value after the perfusion of test solution. Recovery time was represented as the time elapsed when the amplitude of A-CAP is recovered by 50% compared with that of the baseline value after reperfusion with Krebs solution. Data are presented as mean±S.E.M.
Results: Onset times of mixtures were 10.8±0.8, 7.8+0.3, 7.3±0.6, 8.3±0.5, 6.1±0.5, 5.6±0.3, 6.0±0.3 minutes. And recovery times of mixtures were 157±18, 137±27, 104±18, 100±13, 87±19, 63±12, 38±4 minutes. (with lidocaine:bupivacaine concentration ratio of 0:6, 1:5, 2:4, 3:3, 4:2, 5:1, 6:0, respectively)
Conclusion: Onset times were exponentially decreased with the increase in the lidocaine concentration. However, recovery times were lineary increased with the increase in the bupivacaine concentration. So, it should be kept in mind that rapid onset can only be obtained with the expense of substantial reduction in the duration of local anesthetic effect of the mixture, and vice versa.