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(Poster 2)

**HYDROMORPHONE WITH EPIDURAL FENTANYL IN AMBULATORY PATIENTS IN EARLY LABOR** *Parker, R.K.; Connelly, N.R.; Lucas, T.; Fabeem, U.; Dunn, S.M.; Rizvi, A.S.; El-Mansouri, M.; Thakkar, N.M.; Kamasumadram, R. Anesthesiology, Baystate Medical Center, Springfield, MA* **Introduction:** It has previously been shown that epidural fentanyl or sufentanil, after a lidocaine-epinephrine test dose, provides approximately 2h of analgesia, while allowing patients to ambulate (1-5). We thus undertook this study to determine whether hydromorphone would increase the duration of fentanyl analgesia. **Methods:** IRB approval and informed consent from 42 primigravid obstetric patients, >36 weeks gestation, < 5 cm dilation, who requested labor analgesia. After a 3 mL test dose of lidocaine with epinephrine, patients received fentanyl 100 mcg either with or without hydromorphone (300 mcg) diluted to a final volume of 10 mL saline. Pain scores and side effects were recorded at 10, 20, and 30 min, and every 30 min thereafter. Analysis by ANOVA, Mann-Whitney U-test, and contingency test. Significance - p <0.05 level. **Results:** There were no differences between the two groups (Table). **Discussion:** In treating patients with ambulatory epidural injections, we prefer the epidural opioid technique, rather than the CSE, because the former avoids an added step, the expense of a CSE needle, and the necessity of an intentional dural puncture. (1-5) We have demonstrated satisfactory results with epidural fentanyl. However, hydromorphone does not prolong the analgesic duration. When performing an ambulatory labor epidural, after a lidocaine and epinephrine test dose, we do not currently recommend adding hydromorphone to fentanyl. **Reference:** 1. *Anesth Analg* 1998; 87:331-5. 2. *Int J Obst Anesth* 2000;9:94-98. 3. *Anesth Analg* 2000;91:374-8. 4. *Reg Anesth* 1989; 14:225-8. 5. *Reg Anesth* 1992; 17:131-8.

Group	Age (yr)	Height (cm)	Weight (kg)	Analgesic Duration (min)	Cervical Dilatation at Enrollment (cm)
Hydromorphone-Fentanyl n=21	27±6	167±7	86±18	135±52	3±1
Fentanyl n=21	26±7	162±8	84±16	145±46	3±1

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(Poster 3)

**EPIDURAL ANALGESIA AND FUNIC ACID-BASE BALANCE: A META-ANALYSIS** *Reynolds, E.<sup>1</sup>; Sharma, S.<sup>2</sup>; Seed, P.T.<sup>1</sup>* 1. *Anaesthesia & Obstetrics, St Thomas's Hospital, London, United Kingdom*; 2. *Anesthesiology, University of Texas, Dallas* **Introduction:** Meta-Analysis of randomized trials confirms that epidural analgesia increases maternal hypotension, pyrexia, second stage duration and instrumental delivery [1], which may adversely affect the baby. Umbilical artery pH, reflecting both respiratory and metabolic components, is often used as a marker of the intrauterine environment although base excess (BE) is a better index of metabolic acidosis. **Method:** The literature was searched for studies comparing epidural with systemic opioid labor analgesia, in which umbilical cord blood was sampled at birth. If possible we obtained unpublished figures for umbilical artery pH and BE. Random effect meta-analysis was conducted for randomized studies and for all studies. **Results:** 8 randomized and 4 non-randomized studies were identified for which mean and standard deviations or full data were obtained for pH. BE data were obtained for 4 randomized and 4 non-randomized studies - see table. **Conclusion:** Epidural analgesia has a favorable effect on funic pH and base excess. Including data from non-randomized studies does not materially affect this conclusion. The known reductions in maternal stress and sympathetic tone that occur with epidural analgesia improve the intrauterine environment, despite theoretical potential adverse effects. Table. Differences (epidural - control) **Reference:** 1. Halpern SH, et al. *JAMA* 1998; 280: 2105-10.

	Subjects	Difference	95% CI
pH random	1748	+0.007	+0.001to+0.013
pH all	2020	+0.006	-0.007to+0.019
BE random	1345	+0.813	+0.024to+1.603
BE all	1618	+1.008	+0.435to+1.581

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(Poster 4)

**THE OPTIMAL EPIDURAL INFUSION FOLLOWING THE COMBINED SPINAL EPIDURAL TECHNIQUE FOR LABOR.** *Nair, A.; Arnold, I.; Bernstein, H.H.; Zahn, J.; Telfeyan, C.; Beilin, Y. Anesthesiology, Mount Sinai School of Medicine, New York, NY* **Introduction:** After subarachnoid medication is administered with the combined spinal epidural (CSE) technique, many anesthesiologists immediately start an epidural infusion to prolong the analgesia. The optimal infusion is one that prolongs the analgesia with the least amount of side effects and this has not yet been determined. **Methods:** Following IRB approval and written informed consent, women in labor who requested the CSE technique were enrolled in this prospective randomized study. After administering subarachnoid fentanyl 25 ug and 1 mL bupivacaine (bup) 0.25%, an epidural catheter was threaded 5 cm into the epidural space. Ten minutes following the subarachnoid medication all women received 3 mL bup 0.25% as a test dose and 5 min later were assigned to 1 of 4 epidural infusions; saline, bup 0.125%, bup 0.0625%, or bup 0.04% with epi 1:200,000. All infusions were started at a rate of 10 mL/hr and all except the saline group also had fentanyl 2 ug/cc. Degree of motor block (Bromage 0-3) and BP were assessed hourly as was the time when the patient requested additional medication for analgesia. **Results:** 75 women were enrolled. The results are presented in the table. **Discussion:** Those who received bup 0.125% had the longest duration of analgesia but with the greatest degree of motor block. Those who received bup 0.0625% or 0.04% had a prolongation of analgesia as compared to saline but with less motor block than bup 0.125%.

Group	Duration (min)	Bromage > 0	Bromage >1	Decrease BP >20%
Saline (n=20)	130 (66-195)	8%	0	5%
Bup 0.125% (n=21)	267 (89-517)	53%	12%	5%
Bup 0.0625% (n=17)	190(103-316)	12%	0	12%
Bup 0.04% (n=17)	204(102-339)	0	0	12%

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(Poster 5)

**DO BUPIVACAINE OR THE STAGE OF LABOR ALTER THE INCIDENCE OF FETAL BRADYCARDIA ASSOCIATED WITH INTRATHECAL SUFENTANIL?** *Huffnagle, S.L.<sup>1</sup>; Grujic, B.<sup>1</sup>; Huffnagle, H.J.<sup>1</sup>; Norris, M.C.<sup>2</sup>; Aldea, M.<sup>1</sup>; Atkinson, P.<sup>1</sup>; Grodecki, V.<sup>1</sup>* 1. *Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA*; 2. *Anesthesiology, Henry Medical Center, Stockbridge, GA* **Introduction:** Patients in advanced labor may be at greater risk of developing fetal heart rate (FHR) abnormalities after intrathecal (IT) sufentanil than those in earlier labor.(1) These women also may be more likely to receive bupivacaine plus sufentanil for induction of labor analgesia. Here, we studied the contributions of bupivacaine and stage of labor to the frequency of FHR abnormalities associated with IT sufentanil. **Methods:** We obtained informed consent to participate in this IRB approved study from 57 term parturients. Based on the last recorded cervical dilation before induction, patients were divided into two groups: Early (< 6 cm) and Late (≥ 6 cm). Within each group, patients were randomly assigned to receive either IT sufentanil 10 mcg or IT sufentanil 10 mcg + bupivacaine 2.5 mg. FHR tracings from 15 minutes before to 45 minutes after induction were examined by an obstetrician blinded to patient and drug group. **Results:** The incidence of FHR bradycardia with sufentanil alone was 10.3%; with sufentanil and bupivacaine, 14.3% (p=NS). Fetal bradycardia occurred in 25% of women (5/20) in the Late group and 5.4% in the Early group (2/37) (p = 0.08). Periodic FHR decelerations and neonatal outcome were not effected by stage of labor or choice of drug. FHR bradycardia correlated with eventual cesarean delivery (C/S) (p < 0.02). **Discussion:** Women in advanced labor seem more likely than women in early labor to develop FHR bradycardia after IT sufentanil. The addition of bupivacaine to IT sufentanil does not alter the frequency of FHR bradycardia. FHR bradycardia after induction of labor analgesia may indicate a patient at increased risk for eventual C/S.(2) **Reference:** 1. *Anesthesiology* 1999;91:A1054. 2. *Anesth Analg* 1996;83:742.

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