

## A105 (Poster 64)

## Recovery Room Admission Temperature after Cesarean Delivery: Spinal vs. Epidural Anesthesia

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**Introduction:** Mild postoperative hypothermia has been associated with adverse outcomes after general surgery.<sup>1</sup> Epidural analgesia for labor has been associated with mild maternal hyperthermia.<sup>2</sup> In addition, parturients delivered by Cesarean section (CS) after laboring are more likely to be febrile secondary to infection. The present study compared postoperative temperature in patients undergoing CS with spinal anesthesia (SAB) administered just prior to the procedure, vs. epidural anesthesia (EP) via a catheter used for labor analgesia.

**Methods:** In this IRB-approved study, all 250 PACU records from patients admitted to the L & D PACU between June – September 1999 were retrospectively reviewed. Records were examined for surgical procedure, PACU admission and discharge temperatures, fluid requirements in the OR, use of forced warm air blankets in the PACU, as well as administration of meperidine for shivering and total time in the PACU. One degree Fahrenheit was added to each axillary temperature. Data from patients who received SAB were compared to those with EP by t-test and Fisher's exact test.  $P < 0.05$  was considered significant.

**Results:** 185 patients had CS, 32 had postpartum tubal ligation (PPTL) and the remaining other procedures. All temperature values were oral except for 12 axillary values. Mean PACU admission temperature was significantly lower in CS patients who had SAB vs. EP (Table). Significantly more of these patients had forced air warming in the PACU. Very few patients were treated with meperidine. There was no difference in mean admission temperature for patients undergoing PPTL.

**Conclusion:** Patients who have spinal anesthesia for CS are admitted to the PACU hypothermic. A prospective study is indicated to determine whether this is associated with adverse outcome and whether prophylactic measures are indicated.

Table: Epidural vs. Spinal Anesthesia for CS

Anesth.	Admission Temp (°F)	OR Fluids (L)	Meper. (n)	Warm Air (n)	PACU Time (min)
Epidural (n=76)	98.1 ± 1.4*	2.3 ± 1.1*	4	1*	127 ± 82
Spinal (n=109)	96.5 ± 1.2	2.7 ± 0.8	1	20	121 ± 47

Mean ± SD. Meper. = Meperidine. Warm Air=forced warm air blanket.\* $P < 0.05$ .

**References:** 1) NEJM 334:1209, 1996. 2) Br J Anaesth 67:565, 1991

## A107 (Poster 66)

## Sodium Nitroprusside (SNP) Obtunds The Vasopressor Action Of 5-Hydroxytryptamine (5-HT) On The Placental Intravillous Circulation

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Nitric oxide (NO), a potent vasodilator, is emerging as the major determinant of placental vascular resistance<sup>1</sup>. SNP is a NO donor. 5-HT is implicated in the pathophysiology of preeclampsia<sup>2</sup>. This study shows that SNP completely obtunds 5-HT's usual vasopressor action on placental circulation. The dual perfused, single cotyledon, human placental model was used for these experiments<sup>3</sup>. Eight normal placentae were harvested from healthy women with their informed, written consent and IRB approval. Perfusion pressures (PP) were recorded each minute (min). In 4 experiments, increasing concentrations (conc.) of 5-HT (1 nM, 10 nM, 100 nM, 1000 nM) were presented to the fetal circuit every 30 min. At maximal placental PP response, SNP (50 µM) was added to the fetal perfusate. In 4 more experiments, SNP was presented to the fetal circuit before 5-HT. No PP changes occurred with the lower 5-HT conc. (1 nM and 10 nM). Higher conc. (100 nM and 1000 nM) increased fetal placental baseline PPs from (mean ± se) 69.8±0 to 89.8±12.3, ( $p < 0.05$ ) and 153.5±27 ( $p < 0.02$ ) respectively. Adding SNP at peak PP caused a fall to control PP levels within 20 minutes. When SNP was presented before 5-HT, no increase in PP was seen. SNP, a NO donor, reversed the initial conc. dependent fetal placental vasopressor response to 5-HT within 20 min. Preemptive SNP administration obtunded the expected vasopressor action of 5 HT. Severe intrauterine growth restriction (IUGR) and preeclampsia markedly increase intravillous arteriolar resistance. Clinically, this manifests as absence (AEDF) or reversal (REDF) of fetal umbilical arterial (UA) end diastolic blood flow. AEDF and REDF are indicative of severe fetal stress. Our findings offer support to the hypothesis that, in the presence of IUGR and/or severe preeclampsia, NO or NO donor compounds may be useful in reducing placental vascular resistance to UA bloodflow.

1) Am J Obstet Gynecol 1991;164:687-692.

2) Int J Obstet Anesth 1996;5:108-114

3) Anesthesiology 1995;82:459-468

## A106 (Poster 65)

## Anesthesia for the Obstetric Patient with Multiple Sclerosis

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**Introduction:** The literature concerning the use of various anesthetics in the parturient with multiple sclerosis is extremely limited, consisting of isolated case reports and one case series from our department (1). This series, collected during the years 1982 through 1987, suggests that choice of anesthetic for labor and delivery does not influence the relapse rate of multiple sclerosis in the postpartum period. The current study was done to increase the database in this area by collecting data on all obstetric patients with multiple sclerosis delivering at the Brigham and Women's hospital during the years 1987 through 1999. Effects during this period would be particularly interesting as significantly lower dose epidural infusions were used compared to those used in the earlier study.

**Methods:** After approval by the hospital's Human Research Committee, a computer survey of all deliveries at Brigham and Women's Hospital during the years 1988 through 1999 identified 60 women with the diagnosis of multiple sclerosis. Patients were contacted via phone and medical records were reviewed. 17 women either could not be contacted or declined participation in the study. Data was collected regarding type of delivery, anesthetic technique used and relapse rate. Data was also recorded regarding non-obstetric surgeries, anesthetic technique, and postoperative relapse rate.

**Results:** A total of 66 pregnancies in 43 women were included in the study. 22 had cesarean deliveries and 44 had vaginal deliveries. In 7 pregnancies, relapses of multiple sclerosis were reported; 2 postpartum and 5 during the pregnancy. Postpartum relapses and anesthetic technique are described in Table 1.

**Conclusions:** The postpartum relapse rate reported in this series is extremely low and not apparently related to anesthetic technique.

Type of Anesthetic	Cesarean Delivery	Relapse Number
Epidural	16	1
General	1	
Spinal	4 (1 after epidural)	
Type of Anesthetic	Vaginal Delivery	Relapse Number
Epidural	32	
CSE	2	
Local only	5	1
Unknown	6	

## A108 (Poster 67)

## Response Of The Fetoplacental Vasculature To Graded Hypoxia: A Study Using The Isolated, Dual Perfused, Single Human Placental Cotyledon.

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Using the dual perfused, single cotyledon, human placental model, we have previously confirmed the existence of a hypoxic fetoplacental vasoconstrictor response (HFPV)<sub>1,2</sub>. In this study, the physiologic characteristics of the fetoplacental vascular response to graded hypoxia in the isolated perfused term human placental cotyledon is investigated. Seven placentae were collected from healthy women with their written informed consent and IRB approval. Each placenta was perfused initially with aerated KRB buffer (21% O<sub>2</sub>/5% CO<sub>2</sub>) for 20 minutes while the fetal intravillous vascular pressure (FIVP) stabilized (70-80 mmHg). Both fetal and maternal circuits were then perfused from a common reservoir equilibrated at the desired O<sub>2</sub> concentration (15%, 12%, 5%, 0%). Perfusion pressures for both circuits were measured and recorded at one minute intervals. Changes in fetoplacental vasculature perfusion pressures were measured for 15 minutes of hypoxia along with a 15 minute recovery sequence on 21% O<sub>2</sub>. Significant increases in perfusion pressure indicative of hypoxic fetoplacental vasoconstriction (HFPV) were noted at all subatmospheric concentrations of oxygen studied. The magnitude of HFPV as characterized by the peak perfusion pressures was significantly higher with lower concentrations of oxygen in the fetal and maternal perfusates (0 and 5 percent) when compared with 12 and 15 per cent. The onset time and return to baseline indicative of the latency of HFPV response also showed significant differences – the HFPV was slow to manifest at higher oxygen concentrations when compared to lower concentrations of oxygen. Analyses of the magnitude and time course of HFPV observed in vitro will help further understanding of the physiologic characteristics of the HFPV and its modification by pharmacological agents.

<sup>1</sup> Am J Obstet Gynecol 1987;157:1261-6. <sup>2</sup> Anesthesiology 1997;87:A920.