

O2-3

MATERNAL SURGERY DURING PREGNANCY: A POSTNATAL OUTCOME STUDY USING GUINEA PIGS *de la Fuente, S.G.; Pinheiro, J.C.; Greene, R.R.; Fubanks, S.W.; Reynolds, J.D.*

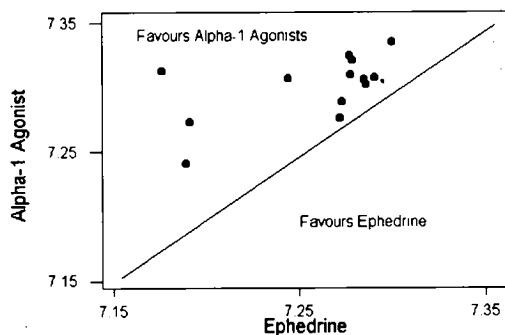
Anesthesiology and Surgery / Endosurgical Research Group, Duke University Medical Center, Durham, NC. Laparoscopy for non-obstetric related surgery during pregnancy is increasing in popularity despite incomplete knowledge of all its effects. The purpose of the present study was to contrast postnatal behavioral development in offspring who were exposed to maternal CO₂ pneumoperitoneum to those who underwent a laparotomy. Time-dated pregnant guinea pigs (bred in-house) were randomly assigned to one of three treatment groups: CO₂ pneumoperitoneum (P); laparotomy (L); or control (C). Surgeries were performed under isoflurane anesthesia on gestational day 45 (term 68 days). In group P, the abdomen was insufflated with CO₂ for 45 min at 7 mm Hg pressure. For group L, a 5 cm midline abdominal incision was made and kept open for 45 min. Entry points were then closed in layers and animals recovered from anesthesia. Each guinea pig was allowed to deliver without further intervention. On postnatal days (PND) 10, 20, 45, and 60 behavior was assessed by monitoring locomotor and exploratory activity of each offspring in a 1 x 1 m chamber demarcated into 100 ten by ten cm squares. Animals were videotaped in the chamber for 60 min and then each recording was scored for number of squares transited. All scoring was completed by observers unaware of the treatment groups. Locomotor data was log-transformed and then expressed as mean values (standard deviation). To date, a total of 28 litters have been studied. Neither surgical manipulation affected gestational duration or birth-weight. Initially (PND 10), offspring in both group P and group L exhibited higher levels of locomotor activity compared to C offspring: P=1.81 (0.48); L=1.89 (1.01); and C: 1.20 (0.72). However, during development the activity of the L offspring decreased to C levels. In contrast, P offspring continued to exhibit hyperactive behavior into adulthood such that by PND 60 these animals were significantly more active than either L or C pups: P=2.00 (0.69); L=1.27 (0.55); and C=1.18 (0.51). Our preliminary conclusion is that maternal pneumoperitoneum during the late second-trimester equivalent produced persistent hyperactivity in guinea pig offspring. We and others have previously shown that maternal insufflation with CO₂ gas can produce a significant degree of fetal hypercarbia and acidemia. The present result suggests that there may be long term consequences associated with these changes in fetal physiologic status. By extension, the presumed safety and benefits of laparoscopy over laparotomy for surgery during pregnancy may need to be re-evaluated.

O2-4

ALPHA-1 AGONISTS VS EPHEDRINE FOR C/S HYPOTENSION: A SYSTEMATIC REVIEW *Halpern, S.; Chochinov, M.*

Anaesthesia, Sunnybrook and Women, Toronto, ON, Canada. Because alpha-1 agonists (a-1) have been shown to have deleterious effects on uterine blood flow in animals, ephedrine has become the vasopressor of choice in the hypotensive obstetric patient. We report a systematic review of human studies to determine if a-1 agonists cause harm to the neonate. We searched Medline, Embase, and the Cochrane Database from 1966 to present. Key words used were phenylephrine, ephedrine, pregnancy and cesarean section. We also hand searched appropriate journals and supplements for the last 5yrs. We excluded non-human studies. We included any study comparing ephedrine to an a-1 agonist to treat or prevent hypotension due to neuroaxial blockade for elective cesarean section in full term parturients. All RCT's were rated using a validated 5 point scoring system, with a score of > 3 being high quality. Two independent investigators completed searching and scoring. The primary outcome was umbilical artery (UA) pH. The secondary outcome were neonatal Apgar scores. Because of heterogeneous methodology, we did not combine the results mathematically, rather we used a graphical display. We found 13 studies comprised of 737 patients that met our inclusion criteria. 12/13 RCT's were of high quality. A-1 agonists included phenylephrine in 10 studies, angiotensin II in 2, and metaraminol in 1. 7 studies compared prophylactic vasopressor, 5 compared rescue doses, and 1 study included either. 5 studies showed no significant difference in UA pH between groups (one compared umbilical vein pH, with no significant difference). 8 studies showed significantly better UA pHs in the a-1 agonist group (Figure). There were no significant differences in Apgar scores. Animal studies have shown ephedrine to be better for the fetus than a-1 agonists. This systematic review of human studies has shown a-1 agonists to be equally as safe or safer than ephedrine. The use of a-1 agonists in obstetric patients deserves further investigation. Available from MC

L'Abbe Plot of Cord pH--Ephedrine VS Alpha-1 Agonists



Mean or median UA pH values.

* UV pH reported