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Vascular Response To Isoproterenol In Pregnancy
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It is widely believed that pregnant women have a diminished response to vasoactive drugs (1), but this has been difficult to study conclusively. We used the doxal hand vein linear variable displacement transformer (LVDIT) method of Adel (2) to assess the vascular response to isoproteronol (ISO) during and after pregnancy.

Methods: After IRB approval and informed, written consent, 20 healthy pregnant women were studied between 32 and 37 weeks gestation and again at 12-17 weeks postpartum (PP). A dorsal hand vein was cannulated with a 25G IV catheter. Maternal SpO2, ECG, and BP, and FHR were monitored. The LVDIT was mounted on the back of the hand over the vein under investigation, 10 mm proximal to the cannula. A sphygmonanometer was inflated intermittently to a constrictive pressure of 60 mm Hg resulting in a vertical displacement of the core of the LVDIT. The amplitude of the core displacement at baseline (BL) and under drug infusion conditions is directly proportional to the size of the vein and was recorded for each drug dose studied. Phenylephrine (PE) was infused at an increasing rate until 50% constriction, or to a maximum of 9600 ng/min. The PE infusion was continued at that rate and a graded infusion of ISO was started (1-400 ng/min). Total infusion rate was kept constant at 2.5 ml/hr. Dilatation of the vein with ISO was recorded until a maximum response was achieved and a full-dose-response curve was performed. The concentration of ISO resulting in 50% of the maximal dilatation observed (ED50) and the maximal effect (Emax) were determined by non-linear regression. The log of the ED50 was used for statistical analysis and results are expressed as geometric means (95% confidence interval). Pregnant versus PP values were compared by paired t-test. The number of subjects in each group for which ISO dilatation restored the vein to BL was compared by Fisher's exact test.

Results: Two pregnant women did achieve 50% vasoconstriction, thus ISO dilatation was not studied in these subjects. No changes in maternal PP nor FHR tracings occurred during ISO infusion; one PP subject became tachycardic at the maximal dose (400 ng/min). ED50 and Emax did not differ between pregnant and PP subjects (p>0.7). However, return of the vein to BL was achieved in only 4/18 pregnant women and in all PP studies completed so far.

Pregnant (n=18) Pregnant (n=7) Postpartum (n=7)
ED50 (ng/min) 20 (11.35) 16 (4.78)
Emax (%) 82 (65.99) 93 (69.122) 114 (106.121)

Discussion: We have demonstrated that the LVDIT hand vein technique can be used to study vascular responses in pregnant women. With the majority of subjects still to be studied postpartum, firm conclusions about ISO effects in pregnancy compared to PP cannot yet be made.


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Does Oral Azithromycin Have A Role In Prophylaxis For Regional Anesthesia?

The risk of central neo-axial infusions may preclude the use of regional anesthesia in febrile parturients. Macrolides are an attractive choice for prophylaxis due to their broad spectrum of activity. Azithromycin (AZ) has favorable side effect profile, long half-life, and deep tissue penetration (3). However, the pharmacokinetics of AZ are unusual in parturients. The aim of this study was to determine if AZ reached minimal inhibitory concentration (MIC) in maternal fat, blood, and cerebrospinal fluid (CSF).

IRB approval and written informed consent, 21 ASA-I parturients scheduled for an elective c-section under spinal anesthesia were enrolled. Each patient was assigned to receive an oral dose of 1g AZ at either 6, 12, 24, 72, or 168 hrs preoperatively. 3 ml CSF, 10 ml each of maternal blood, urine, amniotic fluid, and cord blood, 2 gm each of placenta, myometrium and adipose tissue were obtained from each patient at the time of surgery. All specimens were collected within 20 min. of each other and frozen. AZ concentration was determined using high-performance liquid chromatography with electrochemical detection.

Patients did not differ significantly in respect to age, weight, and height. All patients tolerated the prooperative AZ without any side effects. Maternal serum and adipose levels of AZ peaked at 6 hrs and plateaued at 24-72 hrs. Myometrial levels peaked at 12 hrs, with drug levels >500 ng/gm for 72 hrs. AZ concentration of <20 ng/ml was found in the maternal CSF across all the time points.

Our study demonstrates that AZ penetrates maternal tissue, however the CSF concentrations are well below MIC50 for Strep. and Straph. species (100ng/ml) after 1g oral dose. Adipose levels are higher than MIC50 and therefore AZ may be effective in preventing an epidural infection. CSF penetration is below MIC50 and AZ may not be useful in treating meningitis unless penetration improves with inflammation. Optimal dosing needs to be established before AZ can be recommended for use as a prophylactic anti-biotic agent. This study was supported in part by an unrestricted grant from Pfizer Corp.


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Is a Trial of Labor in a Patient Who Has Had a Previous Cesarean Delivery Cost-effective?
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It is unknown whether it is cost-effective for women who have had a previous cesarean delivery to have a trial of labor. These parturients have a small risk of uterine rupture with the potential for significant maternal and neonatal adverse outcomes. The goal of this study was to complete a cost-effectiveness analysis of vaginal birth after cesarean (VBAC).

We created a cost-effectiveness decision model from society's perspective incorporating published data on incidences of maternal outcomes and expert opinion on probabilities of neonatal outcomes. We also measured actual hospital cost data for patients having vaginal or cesarean delivery and then computed incremental costs of adverse outcomes.

The incremental cost-effectiveness of an elective repeat cesarean delivery relative to a trial of labor equaled $5,200 per quality-adjusted life-year. The model was extremely sensitive to the probability of successful vaginal delivery. If the probability of successful VBAC was less than 69%, elective repeat cesarean is both less expensive and more cost-effective. If the probability of successful VBAC was greater than 76%, trial of labor was then more cost effective.

The cost-effective selection of a delivery method in patients with one previous cesarean, low transverse, should depend on an a priori estimate of the likelihood of successful trial of labor. Maternal preferences for the method of delivery also need to be included. Improved algorithms for computing the likelihood of a particular patient having a successful vaginal delivery after a cesarean are necessary.

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Gastric Emptying in Term Parturients: Is NPO after Midnight Necessary?
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Introduction: Studies in healthy, non-pregnant patients suggest that ingestion of clear liquids up until 2 h before induction of anesthesia does not adversely affect gastric pH and volume. The present study compared gastric emptying in term, nonfasting parturients after ingestion of 50 ml (control) and 300 ml of water.

Methods: Eleven healthy, nonobese, term pregnant volunteers participated in this IRB approved, cross-over study. Gastric emptying was assessed using serial gastric ultrasound and acetaminophen absorption. Volunteers were overnight. After obtaining a baseline blood sample and gastric ultrasound, volunteers swallowed liquid acetaminophen, 1.5 g in 15 ml, followed by 50 ml or 300 ml of water (in a random order on two different study days). Gastric ultrasounds were performed every 10 min for 1 h. gastric antral cross section area was determined, and t50 for gastric emptying was calculated. Blood was obtained every 10 min to 1 h, then every 30 min to 2 h for plasma acetaminophen concentration analysis by HPLC. Areas under the acetaminophen concentration vs. time relationships (AUC), peak concentrations (Cmax), and times to peak (tmax) were determined. Control (50 ml) and treatment (300 ml) data were compared by paired t-test. The criterion for rejection of the null hypothesis was P<0.05.

Results: Gastric emptying t50 was significantly shorter after 300 ml water compared to 50 ml (24±6 min vs. 34±8 min). There were no differences between 50 and 300 ml in AUC at 60, 90, or 120 min, or in Cmax (Table). Tmax was longer for 50 ml.

Conclusion: Healthy, term, nonobese, non-laboring parturients may safely drink clear liquids up to 2 h prior to the induction of anesthesia without risk of delayed gastric emptying or increased gastric volume. Table. Acetaminophen Gasstic Absorption Data (mean ± SD)

<table>
<thead>
<tr>
<th>Water</th>
<th>AUC,mg/ml</th>
<th>t50,min</th>
<th>Cmax,mg/ml</th>
<th>Tmax,min</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 ml</td>
<td>1018±397</td>
<td>152±501</td>
<td>1949±606</td>
<td>33±11</td>
</tr>
<tr>
<td>300 ml</td>
<td>1091±306</td>
<td>1587±424</td>
<td>1988±520</td>
<td>31±13</td>
</tr>
</tbody>
</table>

P<0.05.