Abstract #: 32

**Epidural Neostigmine Dose Response for Labor Analgesia**

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**Background:** Epidural local anesthetics can cause motor blockade and prolong labor. As a result, adjuncts such as lipid soluble opioids are employed, but side effects can limit their usefulness.1 Also, opioids increase workload for documentation of narcotics. Non-opioid adjuvants have been studied as part of an ongoing effort to provide labor analgesia while minimizing side effects.1 Neostigmine (NEO) has proven to be an effective adjuvant to epidural bupivacaine (BUP).2 In contrast to spinal NEO, epidural NEO reduces BUP requirements by 19%-25% without maternal nausea.2 This is the first double blinded RCT examining the dose response of epidural NEO for labor analgesia.

**Methods:** After IRB approval and written consent, 200 singleton parturients at <6cm cervical dilation requesting analgesia were randomized to receive 0.125% BUP with 2, 4, or 8ug/ml NEO, or with 2ug/ml fentanyl (control) by PCEA. Initial 15ml loading dose of one of the four solutions was followed by PCEA using the same solution with basal 6ml/hr; demand 5ml; lockout 10 min. The primary outcome measure was avg hourly BUP use. Secondary outcome measures were pain (0-10 VPS), sensory level, motor block, shivering, hypotension, nausea, itching, sedation, and fetal decels.

**Results:** Preliminary data are from 45 evaluable subjects. There are 10 in Group A (2ug/ml fentanyl), 13 in Group B (2ug/ml NEO), 11 in Group C (4ug/ml NEO), and 11 in group D (8ug/ml NEO). Demographics are not different among groups such as age, weight, height, gestational age, and pre-epidural cervical dilation and pain. Preliminary data suggest that adding NEO to BUP shows a trend in dose dependent reduction in BUP use, and that adding NEO is more efficacious than 2ug/ml fentanyl (our data show statistical significance with 4ug/ml NEO, but not at 2ug/ml or 8ug/ml due to small sample size and large std deviation). At all 3 doses of NEO, side effects are not increased over control (2ug fentanyl).

**Conclusions:** Our preliminary data suggest that NEO is at least as effective as fentanyl when used as an adjuvant to bupivacaine, without an increase in side effects. When considering the possibility of eliminating opioid side effects and narcotic documentation, the results are encouraging.

**References**

**Additional File:**

<table>
<thead>
<tr>
<th>Group A Fentanyl 2ug</th>
<th>Group B Neostig 2ug</th>
<th>Group C Neostig 4ug</th>
<th>Group D Neostig 8ug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average bupivacaine used, ml/hr (PCEA only)</td>
<td>17.0 ± 3.38</td>
<td>13.50 ± 6.26</td>
<td>13.28 ± 3.85*</td>
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<tr>
<td>Average bupivacaine used, ml/hr (PCEA plus physician top-up)</td>
<td>18.86 ± 4.52</td>
<td>15.70 ± 6.02</td>
<td>15.62 ± 6.21</td>
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</table>

*significantly different from control (group A)