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Title: Comparison Between Intrathecal Sufentanil and Fentanyl for Labor Analgesia

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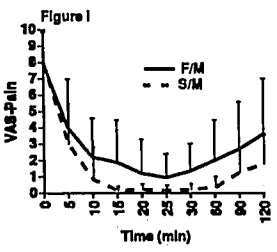
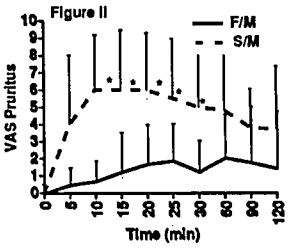
Objective: To compare the duration of pain relief, and the incidence of side effects between two intrathecal drug combinations administered for labor analgesia: sufentanil 10 ug combined with morphine 0.25 mg versus fentanyl 25 ug combined with morphine 0.25 mg.

Methods: Twenty healthy term primagravid patients with cervical dilatation ≤5 cm consented to participate in this IRB approved study. We inserted an 18 gauge Hustead needle at the L2-3 or L3-4 interspace with loss of resistance technique. We then passed a 24 gauge x 120 mm Sprotte spinal needle through the epidural needle and injected the intrathecal narcotics. As determined by a table of random numbers, we injected, in a double blind manner, either sufentanil 10 ug and morphine 0.25 mg. (S/M) or fentanyl 25 ug and morphine 0.25 mg. (F/M). After removing the spinal needle, we threaded an epidural catheter 3 cm into the lumbar epidural space. We used the epidural catheter for subsequent analgesia at the patients request. At baseline and every five minutes for thirty minutes after the initial narcotic injection, we recorded blood pressure and patients rated their pain, nausea, and pruritus on 10 cm horizontal visual analog scales (VAS). They continued to rate these variables every thirty minutes until they requested additional pain relief. When a patient requested additional analgesia, we recorded the time of the request and injected the epidural catheter with local anesthetic. We defined the duration of pain relief as the time from baseline to patient request for additional analgesia. We used unpaired t-tests to evaluate demographic data and duration of pain relief, (mean±standard deviation). We analyzed pain, nausea and pruritus data using one-way analysis of variance and the Mann-Whitney U test. We considered $p<0.05$ as statistically significant.

Results: The two patient groups did not differ in age, height, weight, baseline pain, nausea and pruritus scores, time to delivery, method of delivery, Apgar scores, or incidence of post dural puncture headache(0%). No significant hemodynamic changes occurred. The onset of analgesia was rapid in both groups. The mean duration of analgesia was 129 ± 66 min in the F/M group and 161.5 ± 85 min in the S/M group. The S/M group tended toward more profound analgesia than the F/M group(Figure I). The S/M group showed significantly more pruritus then the F/M group (*$p<0.005$, Figure II). Nausea scores did not differ during the study period.





Conclusions: Both F/M and S/M provide adequate labor analgesia. Although not significantly different, the S/M combination tends to provide more profound analgesia of longer duration.

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TITLE: SUBSTANCE P LEVELS ARE DECREASED IN PREGNANCY

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Introduction: Pregnancy is associated with alterations in central nervous system responses to anesthesia. The minimum alveolar concentration (MAC) of inhaled anesthetics is reduced in pregnancy [1], as well as requirements for local anesthetics [2,3,4]. Since alterations in beta-endorphins in pregnancy have been previously described (4,5), the purpose of this study was to determine alterations in Substance P, a neurotransmitter of the tachykinin peptide family involved in transmission of nociceptive information in pregnant and non-pregnant patients.

Methods: With prior approval from our Institutional Review Board, 19 adult unpremedicated female patients between the age of 18-40 years, (ASA Physical Status I) undergoing elective laparoscopic gynecological procedures, and 23 pregnant patients at or near term were included in the study. Blood was collected for SP levels from the non-pregnant patients prior to induction of anesthesia for surgery. Blood collection from the pregnant patient was performed prior to induction of epidural anesthesia for labor. SP levels were determined using a radioimmunoassay, obtained from Incstar (Stillwater, MN). Details of this method were published recently [6]. Data were analyzed using unpaired Student's t-test.

Results:

Table I

	Non-pregnant	Pregnant
n =	19	23
Mean age (yrs) =	29.78	26.1
SP pg/ml =	182 ± 107	28 ± 15*

*$p<.001$

Discussion: The extreme difference in SP levels in pregnant and non-pregnant patients may be related to the alteration in central nervous system physiology related to the pregnant state. In pregnant patients, plasma endorphin levels are elevated [5] near term. It is possible that the endorphin levels are involved in the alteration of SP levels in pregnant patients. Such a reduction in SP levels may play a role in the sensitivity of the pregnant patient to local and inhalation anesthetics. One can conjecture that the increase in progesterone in pregnancy, in association with increased endorphin levels, decreased SP, all contribute to the physiologic adaption to pain associated with decreased MAC in pregnant patients.

References:
1. Anesthesiology 41:76-83, 1974.
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6. J Lab Clin Med 1990 (Vol 116 #5 p707-710).