A843

TITLE: THE EFFECT OF EPIDURAL BUTORPHANOL AND FENTANYL ON SHIVERING DURING C-SECTION

AUTHORS: AK Chen, M.D., WF Kwan, M.D.
AFFILIATION: Anes. Dept., Harbor-UCLA Medical Center, Torrance, CA 90509

Shivering is commonly observed in patients having C-section under epidural anesthesia. The causes of shivering are many, and narcotics such as fentanyl and sufentanil[1] used epidurally may reduce shivering. IV butorphanol has been used to treat postanesthetic shivering[2], but the effect of epidural butorphanol is unknown. This study will compare the effect of epidural fentanyl and butorphanol on shivering during C-sections.

Institutional approval and informed consents were obtained. 60 parturients having C-sections under epidural anesthesia were randomly assigned to the control, fentanyl or butorphanol group. In the control group 20 ml 2% lidocaine with 1:200K epi. and 2 ml 7.5% $NaHCO_3$ were given. In the fentanyl group 100 ug fentanyl[3] was added, and in the butorphanol group 2 mg was added. Patients requiring IV analgesic supplementation were excluded. Degree of sedation, onset and cessation of shivering, the axillary and room temp., blood loss and IV fluid were recorded. Apgar scores and complications such as nausea were noted.

There were no significant difference in parity, age, room and axillary temp., blood loss, IV fluid given and the Apgar scores in the 3 groups. Shivering was observed in 11 of 19 control patients(58%)(one patient was excluded from study due to IV ketamine use), in 9 of 20 fentanyl patients(45%), and in 1 of 20 butorphanol patients(5%). The difference in the incidence of shivering between the control and butorphanol groups($p<0.01$) and between the fentanyl and butorphanol groups($p<0.01$) were statistically significant. The duration of shivering were 72 ± 32 minutes for the control group(n=11), 67 ± 21 minutes for the fentanyl group(n=9), and 8 minutes for the butorphanol group(n=1). The timing of the onset of shivering varies from during labor, after epidural, during C-sections to the postpartum period. Both butorphanol and fentanyl were significantly sedative than lidocaine alone, although no significant difference exists between fentanyl and butorphanol.

Shivering could prove quite distressing to patients having C-sections despite well administered epidural anesthesia. Fentanyl is commonly used as an adjuvant to epidural lidocaine, yet clinical experience at this institution does not show fentanyl helpful for shivering. Butorphanol used epidurally improves the quality of anesthesia[3] and significantly decreases shivering. Both butorphanol and fentanyl are likely to cause more sedation than lidocaine alone, but excessive sedation was not encountered.

Table 1. Comparing Incidence of Shivering

Group	Total	Shivering Yes	Shivering No	Chi-Square with Yates Correction
Control	19	11	8	
Fentanyl	20	9	11	P>0.5
Butorphanol	20	1	19	P<0.01

Comparing between butorphanol and fentanyl, P<0.01.

Table 2. Comparing Duration of Shivering

Group	n.	Duration in min.(± S.D.)
Control	11	72 ± 32
Fentanyl	9	67 ± 21
Butorphanol	1	8

REF: 1. Anes Analg 68:530-3, 1989. 2. J Post Anesth Nursing V.4 No.4:222-7,1989.3.Anes Analg 68:323-7,'89

A844

TITLE: DESFLURANE ANALGESIA IN OBSTETRICS: MATERNAL AND NEONATAL EFFECTS

AUTHORS: F. Swart, M.D., T.K. Abboud, M.D., J. Zhu, M.D., M. Donovan, M.D., E. Peres da-Silva, M.D., A. Justice, M.D., K. Schaefer, M.D., C. Smith, M.D., K. Toliver, M.S., B. Skeen, M.S., K. Yakal, M.D., J. Rogers, M.D.
AFFILIATION: Department of Anesthesiology, Los Angeles County-University of Southern California Medical Center, Los Angeles, CA 90033

The use of subanesthetic concentrations of inhalational anesthetics such as isoflurane or nitrous oxide is effective in providing pain relief during delivery and is safe for the mother and the baby (1). Desflurane is a new inhalation agent that produces anesthesia rapidly and undergoes minimal metabolism. We investigated the use of desflurane in sub-anesthetic doses for analgesia during the second stage of labor.

Approval of the Institutional Review Board and informed consents were obtained. Sixty healthy parturients undergoing normal vaginal delivery were randomly assigned to receive either desflurane 1.0-4.5% and oxygen (n=30) or nitrous oxide 30-60% and oxygen (n=30). Both patient and obstetrician were unaware of which drug was being administered. Analgesia was assessed using a scale of 0 (no relief) to 4+ (excellent analgesia). Blood loss was estimated and neonates were evaluated by Apgar Scores at 1 and 5 min, cord acid base status and the Neurologic and Adaptive Capacity Scores (NACS) at 2 and 24 hr of age. Data were analyzed for statistical significance using Student's t-test or chi-square when appropriate. Significance was accepted at $P<0.05$.

Both desflurane and nitrous oxide received similar analgesia scores from mothers, anesthesiologists and obstetricians. Blood loss did not differ significantly between the two groups. All neonates were vigorous at 5 min and had normal acid base status. NACS scores were equally high for the two groups of neonates and did not differ significantly. Eight patients in the desflurane group and one patient in the N_2O group had amnesia for the delivery ($P < 0.05$).

These findings indicate that desflurane in subanesthetic doses, combined with oxygen, is a safe and effective inhalation analgesic agent for normal vaginal deliveries but might be associated with amnesia during delivery. Newborns were vigorous and no evidence of excessive blood loss was noted in the parturients. Desflurane has the advantage of permitting delivery of almost 100% oxygen, which may be advantageous if complications of delivery occur.

Reference
Anesth Analg 68: 388-391, 1989.