TITLE: CONTINUOUS EPIDURAL-PCA POST CESAREAN SECTION: BUPRENORPHINE-BUPIVACAINE 0.015% WITH EPINEPHRINE vs FENTANYL-BUPIVACAINE 0.015% WITH AND WITHOUT EPINEPHRINE

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We compared effects of epidural-PCA infusions of buprenorphine-bupivacaine-epinephrine to fentanyl-bupivacaine with and without epinephrine with regards to quality of analgesia, side effects and plasma opioid concentrations. Following IRB approval, we conducted a double-blind study of 78 consenting parturients for elective cesarean section without systemic opioids. Upon arrival in the PACU, patients were randomized to three groups: I (n=26) epidural-PCA infusion of buprenorphine 3 µg/ml with bupivacaine 0.015% and epinephrine 1 µg/ml, II (n=26) epidural infusion of fentanyl 3 µg/ml with bupivacaine 0.015% and epinephrine 1 µg/ml, and III (n=26) epidural infusion of fentanyl 3 µg/ml with bupivacaine 0.015%. Overall satisfaction was assessed with a 10-point scale. Plasma samples for determination of opioids were obtained at intervals. Epidural infusion characteristics are shown in Table 1. Pain relief was comparable and satisfactory in both groups and all patients could easily ambulate. Side effects are shown in Table 2. No patient had a respiratory rate < 12 breaths/min. Plasma concentrations of buprenorphine and fentanyl are shown in Figure 1. The intensity of side effects did not correspond to plasma levels with either drug. The median satisfaction score was 9 for Group I, 9.5 for Group II and 10 for Group III. Epidural-PCA in all 3 groups was without serious side effects.

Table 1. Epidural infusion characteristics

	Duration (HR) Mean	Range	Total Vol. (ml) Mean±S.D.	Avg. Infusion Rate (ml/hr) Mean±S.D.
Group I	42.0	15-65	482.1±164.3	11.4±2.5
Group II	47.8	28-72	518.8±128.3	11.0±2.3*
Group III	44.8	16-70	579.2±231.1	12.9±2.3

*p < .05 Group II vs. III, Wilcoxon rank sum.

Table 2. Side effects.

	Group I n	%	Group II n	%	Group III n	%
Pruritus	8*	30.8	17	65.4	19	73.1
Sedation	18	69.2	17	65.4	19	73.1
Nausea	10*	38.5	1	3.8	1	3.8
Vomiting	5	19.2	0	0	0	0

*p < .05 Group I vs. II or III, Wilcoxon rank sum.

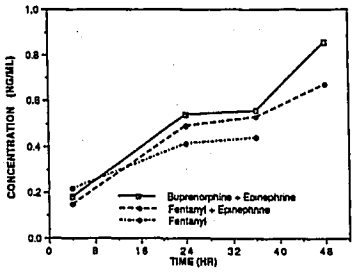

Fig. 1

Plasma opioid concentrations

TITLE: EPIDURAL CLONIDINE INFUSION FOLLOWING CESAREAN SECTION

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INTRODUCTION: Preliminary work suggests that epidurally administered clonidine effectively relieves pain following cesarean section without producing side effects common to opioids. However, clonidine-induced analgesia following a single injection is brief. This study examines, using a double-blind, placebo-controlled design, analgesia and side effects of clonidine (bolus plus continuous infusion) following cesarean section.

METHODS: Following IRB approval and obtaining written informed consent, 60 women scheduled for elective cesarean section under epidural bupivacaine anesthesia were studied. On admission to the recovery room, women were randomly assigned to receive epidurally either saline bolus followed by 24 hr saline infusion, 400 µg clonidine followed by 10 µg/hr, or 800 µg clonidine followed by 20 µg/hr. IV morphine via PCA was available to all patients. Blood pressure, heart rate, sensory and motor blockade, respiratory rate, and level of pain and sedation were assessed at specified intervals. Statistical methods were ANOVA, Chi-square, and Kaplan-Meier survival analysis, with $P < 0.05$ considered significant.

RESULTS: Both clonidine groups had complete pain relief for 4-6 hrs, but only the 20 µg/hr infusion group utilized less morphine over the entire 24 hr period. Compared to saline, clonidine (both groups) decreased blood pressure (by 13±3%) and heart rate (by 15±2%). No patient required trecatment for hypotension, and one received atropine for asymptomatic bradycardia. Clonidine produced transient sedation and prolonged recovery from bupivacaine-induced motor and sensory blockade by 2-3 hrs.

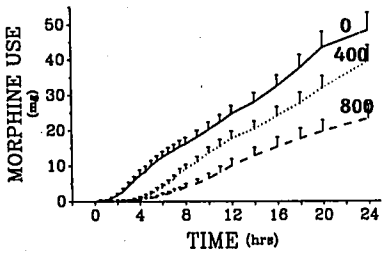

FIG. 1: PCA MS over 24 Hrs.

DISCUSSION: These results agree with previous uncontrolled studies demonstrating complete analgesia following epidural clonidine, 4-800 µg in postoperative patients, although initial analgesia in this study may have been due in part to prolongation of residual epidural anesthesia. Continuous epidural clonidine infusion, 20 µg/hr, produces prolonged analgesia and, in this small study, is not associated with significant side effects.

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