Title: OPTIMIZING POSTOPERATIVE ANALGESIA WITH A RAPIDLY ACTING EPIDURAL NARCOTIC: RESULTS OF A PROSPECTIVE RANDOMIZED DOUBLE BLINDED STUDY

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Introduction. Recent reports recommend the postoperative administration of epidural sufentanil, particularly because of its high analgesic potency and rapid onset of activity.[1,2] The optimal dose range for a single bolus injection following lower abdominal surgery has yet to be determined. This is critical in light of the balance between onset and duration of activity and potential side effects associated with higher doses. We therefore, designed a prospective randomized double blinded study to evaluate four doses of epidural sufentanil for postoperative analgesia.

Methods. The study was approved by the Human Investigation Committee, and informed consent was obtained from all patients preoperatively. Forty ASA I-II patients (n=40) undergoing elective abdominal gynecologic surgery under continuous epidural anesthesia with 2% lidocaine with epinephrine 1:200,000 were randomly assigned to one of four treatment groups. Sufentanil 25, 40, 55, or 70ug diluted in normal saline to a volume of 10cc was prepared and coded by an investigational pharmacist. Intraoperative sedation was permissible; however, medication was withheld for the final 30 minutes of surgery.

Upon arrival in the recovery room a nurse observer assessed the patient's vital signs (HR, BP, RR) and the sensory level of anesthesia. When analgesia was first requested, the study drug was injected via the epidural catheter over a 5 minute period by a physician investigator. Vital signs, visual analogue scale (10 cm VAS) and an observer sedation score were assessed at 5', 10', 15', 30' 45', 1 hour and then every 30' until additional pain medication was requested. Side effects (nausea/vomiting, pruritis, respiratory depression) were continuously assessed. Patients were observed for up to 8 hours following the initial request for additional pain medication. Results are expressed as a mean + SEM. Data was analyzed using a one way analysis of variance. $p<0.05$ is considered significant.

Results. There was no significant difference between groups with respect to age, weight, height or ASA physical status. Figure 1 illustrates the decline in VAS scores from the time of sufentanil administration (baseline) until peak analgesia was achieved (lowest VAS). There was no significant difference between any of the groups with respect to the time to peak analgesia (p = ns). For the groups receiving 40, 55, or 70ug of sufentanil, the VAS decreased to 1 cm or less within 15 minutes.

The duration of analgesia (time of sufentanil administration until request for additional pain medication) was 140.1 + 10.7, 161.5 + 18.5, 208.3 + 21.1, 224.0 + 14.7 minutes for treatment Groups A-D respectively. Duration was significantly greater for Groups C and D when compared to Group A and for Group D when compared to Group B. There was no significant difference in duration between Groups B and C or between Groups C and D. Pruritis and nausea were noted in 22.5% (9/40) and 25% (10/40) of patients respectively. Eight patients with nausea received treatment. Respiratory depression occurred in a single patient in Group D following intravascular injection. This patient was removed from the study and another patient randomized.

Discussion. Epidural sufentanil provides reliable analgesia of rapid onset with a maximum duration of approximately 3.5 hours following lower abdominal surgery. The duration of analgesia was prolonged as the dose increased, however, increases in duration above a dose of 55 ug were not significant. During the 15 minutes following sufentanil administration, VAS scores declined in all groups. Furthermore, there was no difference in the time to peak analgesia among the 4 groups. The high incidence of nausea which we report (25%) is partially explained by extended observation during which time the patients received additional parenteral narcotics. Thus, when injecting sufentanil alone for postoperative epidural analgesia a single bolus of 40-55 ug provides effective analgesia for 2.5-3.5 hours. If sufentanil is used in combination with longer acting opioids or as a continuous infusion, the initial dose can probably be reduced to 25-40 ug. In light of sufentanil's high potency and rapid onset of action this medication should be administered in areas where close supervision (recovery room, ICU) is possible.

References.

1. Leicht CH, Rosen MA, Dailey PA, et al: Evaluation and comparison of epidural sufentanil citrate and morphine sulfate after cesarean section. Anesthesiology 63:A365, 1986

2. Naulty JS, Sevarino FB, Lema NJ, et al: Epidural sufentanil for post cesarean pain. Anesthesiology 65:A396, 1986

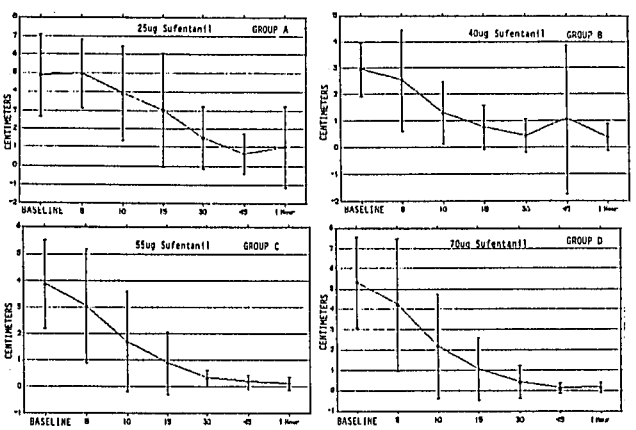

FIGURE 1