TITLE: DOES ROPIVACAINE INDUCE VASOCONSTRICTION?

AUTHORS: JP Guinard, MD, RL Carpenter, MD, BD Owens, MD, B Nadir, RN

AFFILIATION: Service d'anesthesiologie, CHUV, 1011, Lausanne. CH. and Anes. Dept. Virginia Mason Med Ctr, Seattle, WA 98111

Introduction: Subcutaneous injection of ropivacaine has been reported to produce vasoconstriction(1). In this randomized and blinded study we sought to determine if the vasoconstriction is sufficient to decrease surgical bleeding.

Methods: After approval by our Animal Care and Use Committee, anesthesia was induced in 7 piglets (12.2-20.4 kg) with intraperitoneal thiopental and maintained with intravenous methohexital. 6 test sites were identified. Five sites were injected with 10 ml of one of the following solutions: ropivacaine 0.25%, bupivacaine 0.25%, either solution plus epinephrine (Epi) 5 μg/ml, or saline. One site was uninjected. Capillary blood flow was measured at each site with a laser Doppler, before and 10 min after the injections. An incision 5 cm in length, was made through the dermis and blood loss measured over 10 min. Data were compared by ANOVA.

Results: We found no significant differences in capillary blood flow or blood loss between bupivacaine and ropivacaine. Addition of epinephrine decreased capillary blood flow ($p<.05$).

Conclusions: In contrast to previous studies, ropivacaine did not decrease capillary blood flow in our model. Similarly, ropivacaine did not reduce bleeding from the surgical incisions. The reason for this discrepancy is not clear. Obviously, further investigation is necessary to determine whether ropivacaine possesses vasoconstrictor properties.

Table: Average blood loss (gm) and % Change in capillary blood flow (Mean ±SD).

	Blood Loss	% Change in Flow
Ropiv 0.25%	1.80 ± 0.83	+12.7 ± 34.6
Ropiv 0.25% + Epi	1.03 ± 0.48	-60.4 ± 55.2
Bupiv 0.25%	1.75 ± 0.80	+25.6 ± 94.6
Bupiv 0.25% + Epi	1.00 ± 0.42	-48.0 ± 20.3
Saline	1.59 ± 0.93	-2.8 ± 7.2
Control-no injection	0.60 ± 0.42	+1.1 ± 6.7

References: Kopacz DJ, Carpenter RL, Mackey DC: Effect of ropivacaine on cutaneous capillary blood flow in pigs. Anesthesiology 71:69-74, 1989

TITLE: BALANCED ANESTHESIA AND POSTOPERATIVE PAIN; IS THE NARCOTIC IMPORTANT?

AUTHORS: D. Varlotta, D.O., G. Smalto, M.D.

AFFILIATION: Department of Anesthesiology, University of South Florida College of Medicine, Tampa, FL, 33612

Pentamorphone (A-4492-10) is an investigational morphinan derivative with potent analgesic properties. To evaluate the effects of intraoperative use of this drug on recovery room course, we compared the incidence of postoperative pain in patients recovering from balanced anesthesia supplemented with fentanyl or pentamorphone.

After Institutional Review Board approval, 48 consenting ASA class I to III patients who were 18 to 70 years old were randomly assigned as part of a multicenter study to receive balanced anesthesia using either pentamorphone (n=32) or fentanyl (n=16) as the narcotic component. For induction of anesthesia, patients received either fentanyl (5.0 or 7.5 μg/kg) or pentamorphone (0.75 or 1.0 μg/kg) in a double-blind fashion, with thiopental (3 to 5 mg/kg) and succinylcholine (1.5 mg/kg). Anesthesia was maintained with 70% nitrous oxide and oxygen, vecuronium (0.05 to 0.1 mg/kg), and supplemental doses of the appropriate study drug: pentamorphone (0.15 μg/kg) or fentanyl (1.5 μg/kg). Isoflurane was used to supplement anesthesia if two successive doses of narcotic failed to decrease heart rate and/or blood pressure. On arrival in the recovery room, and 15 minutes later, patients were asked to grade their pain using a 0 to 100 mm visual analog scale (VAS). Requirement for pain medication was recorded thereafter for one hour. If the patient requested pain medication, morphine sulfate was given, and VAS data collection was discontinued. Data are summarized as mean ± SD. Visual analog scores were statistically evaluated with a Mann-Whitney rank-sum test. The incidence of pain requiring medication in the first postoperative hour was compared with a chi square test.

Type and duration of operations performed were similar for patients in the two groups. The cumulative dose of fentanyl and pentamorphone was 10.2±2.0 μg/kg and 1.4±0.6 μg/kg, respectively. The intensity of pain, as reflected by the VAS, was not significantly different between the two groups of patients, either on arrival to the recovery room (T0) or 15 min later (T15) (Table). The incidence of postoperative pain requiring medication during the first hour was greater for patients who received pentamorphone (16 of 32) than for those who received fentanyl (4 of 16) ($p<0.05$).

Table: VAS (mm) results.

	T0	T15
Pentamorphone	30±31	27±28
Fentanyl	24±21	33±26

The analgesic properties of pentamorphone and fentanyl appear to be similar in the immediate postoperative period. However, a greater percentage of patients who received pentamorphone (50%) required postoperative pain medication during the first hour of recovery, than those who received fentanyl (29%)($p<0.05$).

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