TITLE: "SMOOTHER" PAIN CONTROL WITH EPIDURAL VS. PATIENT-CONTROLLED I.V. MORPHINE FOLLOWING JOINT REPLACEMENT SURGERY

AUTHORS: R.S. Weller, M.D., M. Rosenblum, M.D. Ph.D., P. Conard, CRNA, J.B. Gross, M.D.
AFFILIATION: Department of Anesthesiology, University of Connecticut Health Center, Farmington, CT 06032

Introduction: Lower extremity joint replacement surgery causes severe postoperative pain. We describe the first randomized, prospective study comparing epidural (EPI) morphine with patient-controlled (PCA) i.v. morphine in these patients.

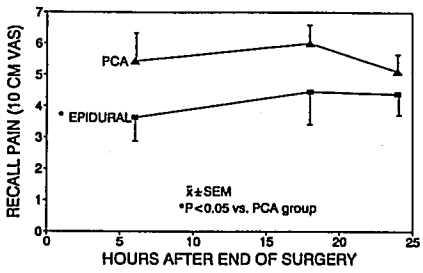
Methods: Thirty patients scheduled for total hip or knee replacement surgery with lumbar epidural anesthesia consented to participate in this IRB-approved study. One h before the end of surgery, patients randomized to receive EPI morphine for post-operative analgesia received 3-5 mg of epidural morphine; 12 h later EPI morphine was repeated. PCA patients received sufficient i.v. morphine for initial pain control; they then began PCA with 1.0-1.5 mg of i.v. morphine prn (10-min lockout interval). Six, 18, and 24 hours after surgery, we administered two, 10-cm visual-analog pain scales (VAS): pain at the time of evaluation (current pain), and the maximum pain since the last evaluation (recall pain). We used two-way analysis of variance and chi-square or Fisher's exact test to analyze data; $P \leq 0.05$ indicated statistical significance.

Results: Current pain did not differ between EPI and PCA, but EPI patients recalled significantly less pain (VAS=4.2±0.5, $\bar{x}$±SE) *between* observations than PCA patients (VAS=5.5±0.4, $P<0.05$) (Fig. 1). Minimum respiratory rates were lower and the incidence of pruritus was higher in EPI patients; the incidence of nausea, vomiting, sedation, and urinary retention did not differ between groups (Table).

Discussion: Patients who received EPI recalled less postoperative pain during the first 24 hours than patients who received PCA. This may have been due to the decreased fluctuation and longer duration of analgesic effect seen with EPI as compared to PCA morphine.

| | EPI (N=15) | PCA (N=15) |
|---|---|---|
| Pruritus | 4 | 0* |
| Nausea/vomiting | 5 | 5 |
| Somnolence | 8 | 12 |
| Urinary retention | 9 | 6 |
| Minimum Respiratory rate | 15.0±0.3 | 16.5±0.4* |

$\bar{x}$±SE *P≤0.05 compared with EPI group






TITLE: INTRAPERITONEAL LOCAL ANESTHETICS DURING LAPAROSCOPY.

AUTHORS: P. Narchi, MD, D. Benhamou, MD, H. Fernandez, MD, F. Legendre, RN, JX Mazoit, MD.
AFFILIATION: Département d'Anesthésie, Université Paris Sud, Hôpital Antoine Béclère, 92141 Clamart, France.

INTRODUCTION: Perioperative analgesia using peritoneal lavage with local anesthetics is frequently used for tubal ligation under laparoscopy with or without general anesthesia and its efficiency has been clearly demonstrated (1, 2). Whether the absorption of these drugs through this large highly irrigated surface may lead to toxic plasma levels is still unknown. Thus, the goal of our study was to calculate the pharmacokinetic parameters after intraperitoneal injection of lidocaine and bupivacaine.

METHODS: After institutional approval, informed consent was obtained from 20 ASA-1 female patients scheduled for diagnostic laparoscopy. All patients were premedicated with 100 mg of hydroxyzine p.o and general anesthesia with intubation was performed using midazolam, thiopentone, fentanyl, vecuronium bromide and maintained with N2O/O2 and isoflurane. At the beginning of the procedure, the surgeon injected in the right subdiaphragmatic area 80 ml of one of the 3 following solutions: group A (n=8) 0.5% lidocaine with 1/320.000 epinephrine, group B (n=6) 0.5% lidocaine with 1/800.000 epinephrine and group C (n=6) 0.125% bupivacaine with 1/800.000 epinephrine. Blood samples were withdrawn via an iv peripheral catheter controlateral to the infusion line before injection (t0) and then 1, 3, 5, 10, 15, 20, 30, 40, 60, 90, 120, 180, 240, 360 and 480 minutes after the injection. Local anesthetic serum concentrations were measured by gas chromatography with a nitrogen specific detector. A non compartimental pharmacokinetic analysis was used to derive the individual following parameters: C max, T max, terminal half life(T1/2), clearance(Cl/f) and mean residence time(MRT). Statistical comparison between groups was made using nonparametric tests as appropriate.

RESULTS: Demographic data with respect to age, weight and height were similar between groups. No side effects occured following the injection of either local anesthetic. Comparative pharmacokinetic data of the 3 groups are shown in table 1 and mean serum levels profile in figure 1.

DISCUSSION: The observed C max were far below toxic levels in all patients despite the use of large doses of lidocaine (400 mg) and bupivacaine (100 mg). The magnitude of C max depends on both absorption and disposition. In fact, both a delayed T max and a large ratio of Cl/f were observed: T max was surprisingly delayed when compared to the values observed after usual regional blocks and T1/2 was prolonged suggesting a slow and progressive absorption by the peritoneum. On the other hand, the markedly increased Cl/f may be attributed to an hepatic "first pass effect" since the peritoneum is drained by the portal vein. In the absence of an early peak serum concentration as described after intrapleural local anesthetics (3), peritoneal lavage with local anesthetics may thus be considered as a safe method of analgesia.

REFERENCES: 1/ Deeb RJ et al, Reg Anesth, 1985, 10: 24-27. 2/ Spielman FJ et al, Am J Obst Gynecol, 1983,146: 821-824. 3/ Denson D et al: Reg Anesth, 1988,13: S 47

PHARMACOKINETIC PARAMETERS ( Mean ± SD)

| | LIDO 1/320.000 | LIDO 1/800.000 | BUPI 1/800.000 |
|---|---|---|---|
| C max (mcg/ml) | 2.20 ± 0.99 | 1.61 ± 0.69 | 0.91 ± 0.34 |
| T max (min) | 58 ± 22 | 74 ± 21 | 67± 34 |
| T 1/2 (min) | 131 ± 29 | 158 ± 55 | 230 ± 65 |
| MRT (min) | 210± 55 | 248± 88 | 308± 85 |
| CL/f (ml/min) | 1030 ± 600 | 1028 ± 307 | 543 ± 215 |

SERUM CONCENTRATIONS