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Intranasal fentanyl titration for postoperative pain management

Striebel H.W., Gottschalk B., Krämer J.
Department of Anesthesiology and Intensive Care Medicine, Steglitz Medical Center, Free University of Berlin, Germany

Aim of the study: Opioids for postoperative pain relief are even nowadays most often given by intramuscular injection (1). One disadvantage of intramuscular injection is the very slow onset of action, which makes it impossible to perform opioid titration adjusted to individual demands. The intravenous route should be preferred, but many patients do not have an intravenous line.

Recently some autors have described intranasal opioid application for premedication in children (2). The aim of the present study was to find out whether postoperative opioid titration can be adjusted to individual requirements by intranasal application of fentanyl.

Methods and patients: 50 patients having undergone abdominal, orthopedic or neurosurgical operations were included in a randomized, doubleblind prospective study. When complaining about pain, 25 patients received 6 sprays (0.027 mg) fentanyl intranasally and simultaneously 6 ml NaCl intravenously (nasal group). The other 25 patients received 6 sprays of NaCl intranasally and 6 ml of a diluted fentanyl solution (0.027 mg) intravenously (i.v. group). In both groups, the dosage was repeated every 5 min. until the patients were satisfied. Before the beginning of opioid titration and 10, 20, 30, 40, 50, 60, 70, and 80 min. thereafter, pain was evaluated with a 101-point numerical rating scale (101-rs.). Blood pressure, arterial oxygen saturation (via pulse oximeter), respiratory rate and side effects were registered.

Results: Sufficient pain reduction could be achieved in all patients (see tabl. 1). None of the patients showed signs of respiratory depression after fentanyl application. About 25 % of the patients of both groups complained about slight itching in the nose shortly after spray application. The total dose of fentanyl was 0.085 mg (min.: 0.027, max.: 0.135) in the i.v. group and 0.109 mg (min.: 0.027, max.: 0.216) in the intranasal group.

time/min.	0	10	20	30	40	50	60	70	80
101-rs. nas.	61	51	39	31	28	20	18	21	19
101-rs. iv.	61	31	24	14	19	22	22	24	21

tab. 1

Discussion: Intranasal fentanyl titration is suitable for demand-justed postoperative pain management and is comparable to intravenous fentanyl titration. The onset of action after intranasal application was comparable to that after i.v. injection. The intranasally administered dose was about 1.23 times as high as the intravenously administered dose. Serious side effects were not seen. Intranasal administration of fentanyl provides a comfortable way of opioid application.

References: 1. Lehmann KA et al (1987) Anaesthesist 30:400,
2. Henderson JM et al (1988) Anesthesiology 68: 671

A672

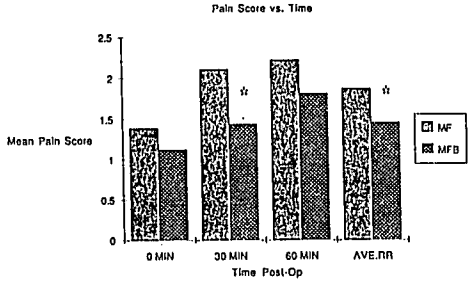
TITLE: INTRATHECAL MORPHINE AND FENTANYL WITH AND WITHOUT BUPIVICAINE FOR THE CONTROL OF POSTOPERATIVE PAIN AFTER MAJOR ABDOMINAL SURGERY

AUTHORS: K. Gwirtz, M.D., G. Peneff, M.D.
AFFILIATION: Department of Anesthesia, Indiana University Hospital, Indianapolis, IN

INTRODUCTION: Intrathecal morphine sulfate, when administered at the end of surgery, may not have a sufficiently rapid onset to provide adequate analgesia in the early postoperative period. The purpose of this study was to demonstrate the rapid clinical efficacy of intrathecal morphine sulfate and fentanyl administered in combination after major abdominal surgery. In addition, we evaluated the potential for intrathecal bupivicaine to improve the onset and/or degree of early postoperative analgesia provided by this combination of narcotics.

METHODS: After obtaining approval by our institutional review board and informed consent, patients scheduled for major abdominal surgeries were enrolled in a random, double-blind study to receive one of two intrathecally administered drug combinations. Group 1 (n=18) received morphine sulfate (0.5-0.7 mg), fentanyl (25 mcg), and a placebo (0.5 cc of 8.25% dextrose in water). Group 2 (n=16) received the same combination with 0.5 cc of 0.75% bupivicaine instead of the placebo. All patients received their intrathecal injections after completion of the surgical procedure but prior to emergence from general anesthesia. Pain scores were evaluated on a scale of 1 to 5 (1=no pain, 2=minimal pain, 3=mild pain, 4=moderate pain, and 5=severe pain) by a blinded observer upon arrival to the post-anesthesia care unit, and then at 30, 60, and 240 minutes. Data was analyzed using the Wilcoxon rank-sum and chi-square tests.

RESULTS: Both groups had very low initial pain scores with 76% of Group 1 patients and 90% of Group 2 patients having pain scores of 1 or 2 during the first 60 minutes in the PACU. Those patients receiving bupivicaine in addition to the narcotics had lower average pain scores ($P<0.05$) with the greatest reduction in pain occuring in the initial 30 postoperative minutes.



DISCUSSION: The combination of fentanyl and morphine when administered by intrathecal injection at the conclusion of major abdominal surgery provides rapid and potent postoperative analgesia. The addition of 3.75 mg bupivicaine to this combination hastens the onset and increases the degree of analgesia. In the absence of any currently available single intrathecal drug capable of providing both rapid onset and sustained duration of analgesia, combination therapy represents a rational alternative.

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3. Akerman B, Arwestrom E, Post C. Local anesthetics potentiate spinal morphine antinociception. Anesth Analg 1988;67:943-948.