TITLE: DIRECT OBSERVATION OF THE EPIDURAL SPACE BY THE SUPERFINE FIBERSCOPE

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Introduction: Although epidural anesthesia is a well-established anesthetic method, the anatomy of the epidural space is still a focus of research. Of particular interest is whether or not the epidural space opens temporarily or permanently. Preliminary results using a rigid-type epiduroscopy in vivo have demonstrated that the epidural space opened only temporarily in the living subject when small increments of air were injected(1). In this study the superfine fiberscope with an outer diameter of 0.8mm which can be advanced through 18 gauge Tuohy needle, was inserted into the epidural space to examine the patency of epidural space in 42 clinical patients who were scheduled for general surgery.

Methods: The superfine fiberscope used is an Olympus XPF-8-3 and 8-4. It is a flexible fiberscope with an outer diameter of 0.8mm and with a working length of 900 and 1100mm. It contains 3000 elements of glass fiber. The depth of field was from 1 to 30mm. All findings were documented by videography.

During a period of 7 months, epiduroscopy using this superfine fiberscope was performed on 42 patients aged 31 to 83 years. 27 were women. All were classified ASA physical status 1 or 2, and were scheduled for general surgery under general anesthesia with epidural tubing. All had normal coagulation test and platelet count. The patient gave informed consent to participaiton in the study.

Epiduroscopy was performed in a manner as similar as clinical epidural anesthesia. The subject was placed in the lateral position. The epidural space was located at the thoracic intervertebral space (29 patients) and at the lumbar interspace (13 patients), using an 18-gauge Tuohy needle and a paramedian approach. The epidural space was identified by hanging drop or loss of resistance to air. After a 19-gauge nylon catheter was advanced 2-3cm, the catheter was pulled out carefully and the superfine fiberscope was introduced through the Tuohy needle instead. The fiberscope was advanced 5-10cm and the epidural space was observed with special attention to the patency of epidural space and also the amount and distribution of fat, blood vessels, and connective tissue.

Results: Two thirds of 42 cases gave clear view of epidural space. The epidural space presented as either a space that opened permanently or a space that was occupied with large masses of fat. In the space that opened permanently the superfine fiberscope could be advanced 5-10cm without difficulty. Although in some cases large masses of fat and connective tissue greatly obstructed the view, the fiberscope could be advanced and reach the opened space. No complication, such as accidental dural puncture, epidural hematoma, infection, nerve injury was not caused.

Discussion: Although Blomberg has reported (1) that the lumbar epidural space in the living subject is mainly a potential space that rather reluctantly and temporarily opens up as air or fluid is injected, this study demonstrates that the thoracic or lumbar epidural space remains mostly open permanently. This difference may depend on the rigid-type endoscope in his study or the flexible-type fiberscope in this study.

Reference:

1.Anesth Analg 68:157-160,1989

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TITLE : LONG-ACTING OPIOIDS ADMINISTERED IN THE RECOVERY ROOM PROVIDE MORE SATISFACTORY POST-OPERATIVE ANALGESIA

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INTRODUCTION: Quality postoperative analgesia includes a smooth transition and careful follow-up mainly between the recovery room and the ward, and is often unsatisfactory because of the numerous changes in medical and nursing staff responsible for its management. The purpose of this study was to determine if a long-acting opioid, Methadone (M), administered in the recovery room, provides a more satisfactory quality of analgesia when compared to a short-acting (Pethidine [P]), and an intermediate-acting (Buprenorphine [B]) opiate in patients undergoing elective cholecystectomy.

METHODS: After Investigation Committee approval and informed consent, 30 ASA I or II patients (pts) were randomly allocated to receive in the immediate post operative period equipotent doses of either M 75 μg/kg (n=10), P 750 μg/kg (n=10), or B 2,5 μg/kg (n=10). The anesthetic technique was the same for all pts: premedication (Midazolam 7.5 mg p.o.) was administered 1 hr before induction of anaesthesia (Thiopental 4 mg/kg) which was maintained by isoflurane 0.5-1.5%, 40% 0_2 in NO_2 and Fentanil 2 μg/kg (total dose). At the end of the surgical procedure, the pts were admitted to the recovery room where the following data were recorded : pain score (PS) using a visual analogue score, respiratory rate (RR) and other vital signs. Each patient then received either M, P or B and the same data were recorded 15 min and 30 min after administration of the opioid. If the PS at 30 min was >0 and the RR >10, the same opioid at the same dosage was administered for the second time and the same data were recorded again after 15 min and 30 min. If the PS was still >0 (and the RR >10) the same sequence described was repeated above for the 3rd and final time. All the pts returned to the ward 45 min after the last dose of analgesic. For the next 24 hours, pain was controlled with P alone (50-75mg IM PRN). Global PS, total doses, and number of reinjections of P were recorded at 24 h on the ward when the study was completed. Statistical analysis included t-test and ANOVA with $p<0.05$ was considered significant.

RESULTS: The demographics of the 3 groups were similar, as were the PS on arrival in the recovery room (Table), and the number of reinjections of the analgesics in the recovery room. M significantly reduced the PS 30 min after the 1st injection when compared to B (4±2.6 vs 6.2±1.5;$p<0.05$) and 15 and 30 min after the 3rd injection when compared to P (1.8±0.8 vs 4±2.1; $p<0.01$ and 1.7±2.1 vs 4.4±2.3; $p<0.05$ respectively). As indicated in the table, the mean time intervals before a supplemental dose of P was administered on the ward was significantly longer with M than with P. The number of P doses required to control pain on the ward was significantly higher in the P group when compared to the M and B groups. At 24h the global PS was significantly smaller with M than with P. Secondary effects consisted of nausea, vomiting (M:n=3, P:n=7, B:n=5) and urinary retention (M:n=1, P: n=4, B:n=1). After the second injection of M, one patient had RR of 8/min.

CONCLUSIONS: When compared to P, M provided a significant decrease in PS in recovery room and in global PS, and required less frequent analgesic supplementation in the first 24 h. B provided intermediate results. Our data suggest that long acting opioids such as Methadone administered in the recovery room provide more satisfactory quality of analgesia for the first 24 h.

Table: Comparison of analgesic requirements and pain scores (PS) between M, P and B. (x±SD, *$p<0.05$ when compared to P)

	PS on arrival in recovery room	PS discharge from recovery room	Interval to 1st inject.of P on ward	Number of doses of P given on ward	24 h global PS
M	7.4±2.5	1.2±1.9	12.8±8.3 *	2.1±1.4 *	4.2±1.4*
P	7.8±2.5	2.6±2.8	5.3±4.4	3.5±1.3	5.6±1.0
B	7.8±2.5	2.3±2.4	8.5±6.7	2.2±1.3 *	5.5±1.5