TITLE: PATIENT CONTROLLED ANALGESIA FOR SHOCK WAVE LITHOTRIPSY (ESWL) OF RENAL STONES

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INTRODUCTION: Second generation lithotripters offer immersion-free treatment and a reduction in shock wave induced pain. Pain sensations caused by advanced lithotripters vary widely and have significant impact on anesthetic managment. The presented study was designed to test patient controlled analgesia (PCA) for ESWL and to quantify analgetic requirements by means of PCA during lithotripsy of renal stones (Dornier HM4 System, 60 nF generator).

METHODS: 44 patients with renal stone disease undergoing ESWL were randomized prospectively (with informed consent and approval by the Ethics Committee of the University of Munich). Analgesia in control group patients (n=22) was achieved by an alfentanil infusion titrated by 4 different anesthesiologists not otherwise involved in the study. Patients from the PCA group (n=22) self-administered alfentanil using a patient controlled infusion pump (Injectomat pc, Fresenius, FRG). The German counterpart of the McGill Pain Questionnaire (MPQ) was reviewed with each study patient after lithotripsy.

RESULTS: Alfentanil was more often self-administered by PCA patients than demanded by control group patients (12 PCA vs. 8 control group patients required the narcotic, p=NS). Patients using PCA needed less drug (0.5 vs. 2.15 mg , p=0.005, median values), tolerated higher pain intensities (fig.), showed less sedation (p=NS), and higher oxygen saturation values (p=0.037). PCA patients scored significantly higher in the sensory category of the MPQ (p=0.048) with no differences in affective and evaluative subscales.

CONCLUSIONS: The use of a low pain second generation lithotripter did not result in analgesia free treatment for the majority of patients. PCA increases pain tolerance, reduces narcotic requirements, simplifies ESWL as an outpatient procedure and can be used to quantify analgetic requirements during lithotripsy.

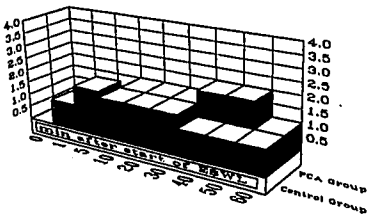

Fig.: Verbal pain scores during ESWL. 1=mild, 2=moderate, 3=severe, 4=unbearable pain. * p=0.003

Title: COMPARISON OF POSTOPERATIVE INTRAVENOUS AND EPIDURAL OPIATE DOSE REQUIREMENTS

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INTRODUCTION. Epidural opiates are increasingly used for pain treatment after surgery. Until now opiate dose requirement (ODR) reductions when using the epidural (EPI) instead of the intravenous (IV) route of administration have not been systematically evaluated. We therefore compared postoperative IV and EPI ODRs from studies offering patient-controlled analgesia (PCA).

METHODS. 323 patients after abdominal surgery who received IV or EPI PCA with morphine (Mor, IV n=12,EPI n=20), meperidine (Mep IV n=28, EPI n=11), methadone (Meth IV n=47, EPI n=85), alfentanil (Alf IV n=13, EPI n=20), fentanyl (Fen IV n=30, EPI n=20) and buprenorphine (Bupr IV n=20, EPI n=17) were examined. IV/EPI ODR ratios (ODRR) over 17 h were calculated and set against the opiate s partition coefficient (PC).

RESULTS. Table 1 shows IV and EPI ODRs, EPI/IV ODR ratios and the opiate PCs.

Conclusions. The results show that IV/EPI ODR ratio (1) is highest with Mor and lowest with Meth and Bupr and, (2) is not related to opiate lipophilicity. We assume that the low IV/EPI ODR ratios of Meth and Bupre may be attributed to slow elimination of Meth from the body and slow dissociation of Bupr from the opioid receptor site. Because IV and EPI Meth and Bupre ODRs are almost the same, it remains to be established whether the quality of analgesia is so much better as to recommend EPI use of these opiates.

Table 1

	EPI ODR (mg)	IV ODR (mg)	IV/EPI ODRR	PC
Mor	5.0	45.9	9	*1.4
Mep	182.0	442.0	2	*39
Meth	10.3	13.0	1.3	*116
Alf	4.5	9.1	2	#129
Fen	0.4	1.2	3	#955
Bupr	0.52	0.78	1.5	#2320

* Ethanol/Water; # Octanol/Water