TITLE: COMPARISON OF TWO SEDATIVE-ANALGESIC TECHNIQUES FOR LITHOTRIPSY UNDER MAC

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Immersion extracorporeal shock wave lithotripsy (ESWL) is widely used to treat urinary tract calculi. Although these procedures are usually performed under general or epidural anesthesia, we designed a study to compare the intraoperative effects and recovery profiles of two sedative-analgesic techniques for immersion ESWL.

44 consenting ASA I-III adult outpatients scheduled to undergo immersion ESWL with the Dornier-HM3 lithotriptor were randomly assigned to one of two treatment groups according to an IRB-approved protocol. The first group (FP, n=21) received fentanyl, 2-3 μg/kg iv, followed by propofol, 0.75 mg/kg iv and a maintenance propofol infusion, 50 μg/kg/min. The second group (MA, n=23) received midazolam, 0.05-0.1 mg/kg iv, followed by alfentanil, 10 μg/kg iv, and a maintenance alfentanil infusion, 1.0 μg/kg/min. The infusion rates were varied to achieve adequate sedation and analgesia. Mean arterial pressure, heart rate, respiratory rate (RR), and O_2 saturation (SaO_2), were measured at predetermined time intervals. Postoperatively, the adequacy of the technique was evaluated by the anesthesiologist, urologist, and patient. Side effects and overall satisfaction with the sedation technique were assessed with a follow-up questionnaire. During the same time period, 29 patients who received epidural anesthesia for similar ESWL procedures were compared with the two sedation groups. Data were analyzed using ANOVA and Chi-square tests, with $p<0.05$ considered significant.

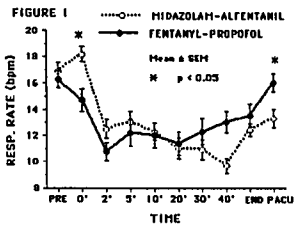
The three groups were comparable with respect to demographic data and calculi fragmentation. Both FP and MA groups had similar anesthesia and recovery times (table 1). These times were significantly shorter compared to the epidural group. Hemodynamic parameters were comparable between FP and MA, however, both RR and SaO_2 were significantly lower in the MA group (fig. 1 and 2). Both groups were associated with high patient satisfaction and minimal postoperative complications.

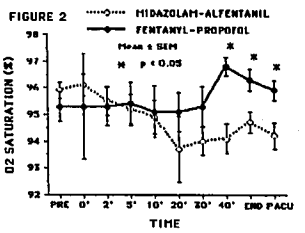
In conclusion, the use of a sedation-analgesic technique is an acceptable alternative to epidural anesthesia for immersion lithotripsy. The fentanyl-propofol technique produced less respiratory depression than midazolam-alfentanil during ESWL.

Table 1: Duration of perioperative events (min)*

	FP	MA	EPIDURAL
ANESTHESIA TIME	65±20 †	56±20 †	105±35
PHASE I RECOVERY	43±16 †	52±27 †	109±43
DISCHARGE TIME	147±50 †	143±56 †	199±64

*Mean ± S.D. †$p<0.05$ vs epidural group





TITLE: MIDAZOLAM PHARMACOKINETICS IN CHILDREN AFTER INTRANASAL ADMINISTRATION

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Midazolam (M) is often used as premedication. Recently, its intranasal (IN) administration[1] was tested in preschool children for premedication. The aim of the present study was to measure pharmacokinetic parameters of IN M.

Following a pilot study[1] that showed the efficient minimal dose was 0.2 $mg.kg^{-1}$, 23 healthly children (ASA 1), aged 2-9 yr, weighing 10-30 kg, were included in the study after informed consent of parents and institutional approval. Children, hospitalized for minor urological surgery, were randomly assigned to 2 groups: group IN (n=13) received IN 0.2 mg. kg^{-1} M; group IV (n=10) received IV 0.2 mg. kg^{-1} M. None of the children have rhinopharyngitis. Fourtheen blood samples were collected before and at 2, 4, 6, 8, 10, 15, 20, 30, 45, 60, 120, 180, 240 and 360 min after M administration. Plasma concentration were measured by GLC with electron-capture detection[2] and analyzed using a triexponential model. Bioavaibility was calculated from the measurement of area under the concentration-time curve (AUC_{IN}/AUC_{IV}). Statistics comparisons were carried out by contingency table.

Results (mean ± SD) are listed in table. No intranasal lesions and disturbances were observed postoperatively.

Important interindividual differences were observed in kinetic parameters, especially after IN administration. By this route, measured avaibility was 0.32. Reduced IN avaibility led to significant lower plasma peak, then to lower $AUC_{0-\infty}$. Plasma peak was obtained after a significant longer time than IV administration. In this study, M showed a satisfactory sedative effect, appearing within 5 to 10 min: this seems to be related to plasma levels that reached hypnotic threshold (100 $ng.ml^{-1}$) within 6 min in all patients. Because it is efficient and not invasive, IN administration of M may be considered as a good route for premedication in children.

Groups	C_{max} $ng.ml^{-1}$	T_{max} min	$T_{1/2\beta}$ min	Vd_{ss} $l.kg^{-1}$	Cl $ml.min^{-1}.kg^{-1}$	$AUC_{0-\infty}$ $ng.ml^{-1}.min$
IN	182¶¶ ±60	13.0¶¶ ±6.26	88.6 ±54.7	0.704 ±0.481	76 ±53	14580¶ ±4846
IV	1477 ±1214	2 ±0	48.5 ±24.9	0.477 ±0.542	84 ±73	40010 ±28683

Table 1: Pharmacokinetic of M. ¶ $p<0.05$, ¶¶ $p<0.01$ vs IV

References
1- ANESTHESIOLOGY 69:972-975, 1988.
2- ANESTHESIOLOGY 65:536-538, 1986.