

TITLE: COMPARISON OF EPIDURAL LIDOCAINE AND EPIDURAL NARCOTICS FOR EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY

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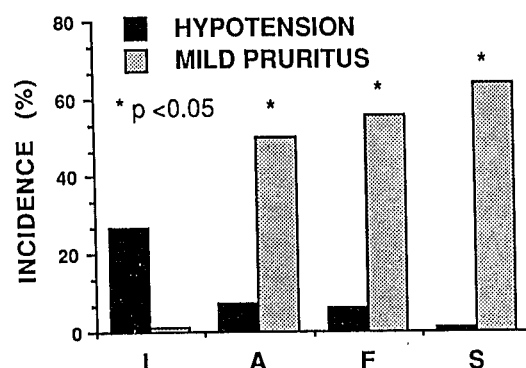
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INTRODUCTION. Extracorporeal shock wave lithotripsy (ESWL) is a noninvasive method of pulverizing urinary tract stones by using focused shock waves. This procedure is painful and necessitates anesthetic intervention. A frequent choice for analgesia is epidural local anesthesia.^{1,2} Recently, short acting epidural narcotics have been employed for ESWL.³ Because they do not block sympathetic and motor function, epidural narcotics could potentially prove superior to local anesthetics during ESWL. Compared to morphine, the more lipophilic narcotics, fentanyl, sufentanil and alfentanil, demonstrate rapid tissue uptake and onset of action with reduced risk of rostral spread and associated pruritus, nausea, and respiratory depression. The purpose of our study was to compare lidocaine to several short acting narcotics given epidurally for ESWL.

METHODS. After approval of the study by the Human Research Committee, 59 patients (ASA I-III) scheduled for elective ESWL under epidural anesthesia were randomly assigned to 1 of 4 groups: Group L (N=15), 2% lidocaine (L) plus 5 ug/cc epinephrine; Group A (N=14), 1000 ug alfentanil (A); Group F (N=16), 200 ug fentanyl (F); or Group S (N=14), 60 ug sufentanil (S). Patients were premedicated with diazepam 70 ug/kg i.v. and infused with 10 ml/kg of 0.9% NS prior to epidural placement. The lumbar epidural space was identified by the loss of resistance technique and a 20 g nylon catheter was inserted 2.5-3 cm cephalad into the epidural space. All patients received a 3 ml test dose of 1.5 or 2% lidocaine with epinephrine to rule out subarachnoid or intravenous catheter placement. Prior to injection, narcotics for Groups A, F and S were diluted to 20 ml with preservative-free normal saline (or to appropriate volumes for extremes of age or height) to achieve hypoanalgesia to alcohol swab and pin prick tests. Group L received similar volumes. Observations were made of motor and sensory segmental spread, and of mean arterial pressure (MAP) before and after administration of the study drug, during ESWL, upon arrival in the recovery room, and up to 1 hour later. The level of discomfort during ESWL was assessed subjectively and patients were given additional i.v. fluids and adjuvant agents as needed. If the pain was perceived as severe, top-off doses of 2% chloroprocaine were administered in the original volume.

RESULTS. The time to adequate thoracic block (14.5±1.6 SEM min) and the level of the block (T₆ or higher) were similar for all groups. The average duration of ESWL was 45 minutes. The figure shows the incidence of hypotension (20% drop in MAP) and pruritus. Only two of 25 patients with pruritus required narcan. The need for additional epidural drugs or i.v. adjuvant agents to treat discomfort during ESWL was not

statistically different among the groups. Post-operatively, there was no immediate (1 hr) or delayed (24 hrs) respiratory depression (< 10 breaths/min). Post-operative nausea or vomiting was seen in all groups (Group L, 27%; Group F, 21%; Group A, 25%; Group S, 57%) and resolved without treatment. The presence of lower extremity motor blockade and hypotension in patients in Groups A, F, and S was attributed to the lidocaine test dose. While 90% of Group L patients had lower extremity block upon arrival in the recovery room, 30% still demonstrated paralysis 1 hr later. Urinary retention or somnolence was not witnessed in any groups. The overall level of satisfaction in each of the 4 epidural groups was 100%.



DISCUSSION. Our study indicates that epidural narcotics are as effective as lidocaine with epinephrine in providing pain relief during ESWL. Lidocaine does not differ from the lipophilic narcotics in onset and duration of analgesia. Compared to Group L, narcotic groups had a higher incidence of pruritus. But patients in the narcotic groups who had had previous spinal or epidural anesthesia with local anesthetics appreciated the lack of lower extremity paralysis. Lidocaine was associated with an increased incidence of hypotension compared to epidural narcotics despite prior i.v. fluid loading. Three patients in Group L had a prolonged recovery room stay (>1 hr) because of persistent hypotension or thoracic motor block. No narcotic patients had such delays. In conclusion, epidural narcotics for ESWL are as effective and safe as epidural lidocaine and offer the potential for earlier discharge. They may be preferable to lidocaine in patients where absolute immobility is not critical but where hypotension should be avoided, e.g. in patients with cerebro- or cardiovascular disease.

REFERENCES. 1. Cousins, MJ, Mather L. *Anesthesiology* 61:276-310, 1984 2. Mathotra, V. *ASA Annual Refresher Course Lectures*, No. 266, 1987 3. Pandit, SK et al. *Anesthesiology* 67:A225, 1987