

TITLE: EPIDURAL VS INTRAVENOUS FENTANYL INFUSIONS IN POSTTHORACOTOMY PATIENTS: RESPIRATORY EFFECTS.

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Respiratory depression in patients receiving epidural fentanyl is uncommon. This prospective double-blind randomized study compared lumbar epidural and intravenous fentanyl infusions with respect to postoperative respiratory function.

Methods: With institutional approval and informed consent 27 patients undergoing thoracotomy were studied. Respiratory pattern [Respiratory Inductance Plethysmography (RIP)] and arterial blood gases (ABG) were measured preoperatively during sleep. RIP measured apnea (AP=tidal volume less than 100 ml) and slow respiratory rate (SRR=respiratory rate less than 10/min). After insertion of a lumbar epidural catheter patients were given a non-opioid general anaesthetic. Patients were allocated to one of two groups: Group E=epidural fentanyl infusion/iv saline infusion, Group I=epidural saline infusion/iv fentanyl infusion. Intraoperatively, a bolus of 1.5 ug/kg of fentanyl was given (E or I) followed by an infusion of 1.0 ug/kg/hr. Infusion rates were adjusted to provide high quality analgesia. Postoperatively RIP monitoring was resumed and ABG's and somnolence (1=awake, 5=unconscious) were measured at regular intervals. Results were analyzed using Student's t-test plus repeated measures analysis of variance and covariance.

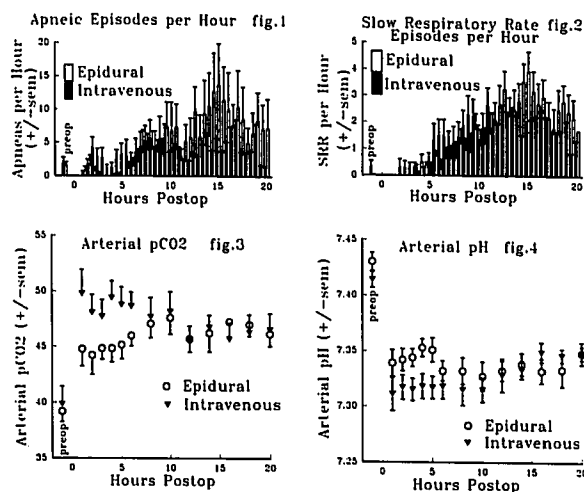
Results: There were no significant between group differences for both pre and postoperative AP/hour, SRR/hour, pH, pCO₂, pO₂ or somnolence. However, within groups there was a significant increase in SRR episodes, decrease in pH and rise in PCO₂ postoperatively.

Discussion: There was no difference in respiratory parameters between E and I fentanyl infusions post-thoracotomy although both were associated with respiratory depression.

TABLE 1. GROUP MEANS (\pm sem)

	EPIDURAL		INTRAVENOUS	
	Preop	Postop	Preop	Postop
pH	7.43 \pm .01	7.34 \pm .01*	7.41 \pm .01	7.33 \pm .01*
PCO ₂	39 \pm 1	46 \pm 1*	40 \pm 2	48 \pm 1*
pO ₂	81 \pm 3	108 \pm 3*	83 \pm 3	116 \pm 3*
Somn.	N/A	1.6 \pm 0.1	N/A	1.6 \pm 0.1
AP/h	1.5 \pm 0.5	5.2 \pm 2.0	2.0 \pm 0.7	3.1 \pm 1.0
SRR/h	.02 \pm .01	1.5 \pm 0.3*	0.3 \pm 0.2	1.3 \pm 0.3*

* P < 0.05 postop vs. preop N/A = Not applicable
Somn = somnolence; AP/h = apneas/hour;
SRR/h = slow respiratory rates/hour



A782

TITLE: DEEP AND SUPERFICIAL CERVICAL PLEXUS BLOCK WITH BUPIVACAINE FOR CAROTID ENDARTERECTOMY: PHARMACOKINETIC STUDY.

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Cervical plexus block is an effective technique for carotid endarterectomy (1). A previous pharmacokinetic study has shown that peak concentration of bupivacaine 0.5 % (18ml) with epinephrine is relatively low (1.67 μ g/ml), when associated with xylocaïne 2 % (10 ml) for superficial cervical plexus block (2). The aim of this study is to determine the pharmacokinetic parameters of bupivacaine following deep and superficial plexus block. Eight patients (ASA II-III) were studied after ethical approval and informed consent. The deep cervical plexus block was performed with 18 ml 0.5 % bupivacaine with epinephrine, the superficial block with 8 ml of the same solution (total dose : 130 mg). Continuous ECG and blood arterial pressure monitoring were recorded. Adequacy of cerebral perfusion was obtained by neurologic assessment of the awake patients. Evaluation of pain using a 0 to 10 visual analog scale was done preoperatively, at incision, cross clamping, unclamping and closure. Blood gas analysis was performed and arterial blood samples were assayed for bupivacaine from 0 to 600 minutes after bupivacaine administration. Plasma concentration was measured using gas chromatography. Non compartmental analysis was used to fit the data. Terminal half life (T 1/2 β), total body clearance (CL), ap-

parent volume of distribution (V_B), maximum peak concentration (C MAX) and time to reach the peak (T MAX) were calculated. A satisfactory pain relief was obtained in all patients. No hemodynamic variations were observed. No respiratory depression was noted during the procedure. T 1/2 β was 149 \pm 30 minutes; CL was 6.7 \pm 2.3 ml/min.kg; V_B was 85.4 \pm 19.5 litres. C MAX reached 2.09 \pm 0.41 μ g/ml; T MAX was 12 \pm 7 min. Bupivacaine plasma concentration decrease is shown on figure 1.

For carotid endarterectomy, deep and superficial cervical plexus block with bupivacaine with epinephrine is a safe technique because C MAX never reached the plasma toxic level.

References:

- 1-Arch. Surg. 122 : 807-812, 1987
- 2- Anesthesiology 69 : A373, 1988

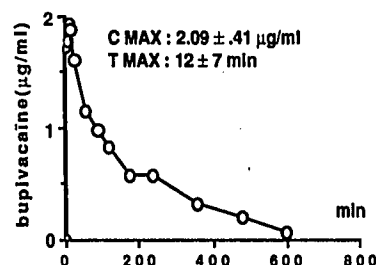


Figure 1 : Pharmacokinetics of bupivacaine