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=unconcious) 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, pCO_2, pO_2 or somnolence. However, **within** groups there was a significant increase in SRR episodes, decrease in pH and rise in PCO_2 post-operatively.

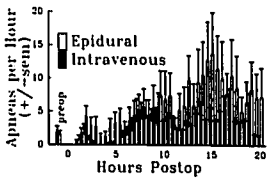
Discussion: There was no difference in respiratory parameters between E and I fentanyl infusions post-thoracotomy although both were associated with respiratory depression.

TABLE 1. GROUP MEANS (± sem)

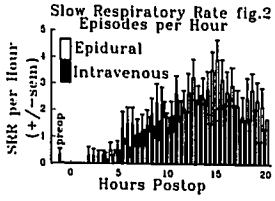
	EPIDURAL		INTRAVENOUS	
	Preop	Postop	Preop	Postop
pH	7.43 ±.01	7.34 ±.01*	7.41 ±.01	7.33 ±.01*
PCO2	39 ± 1	46 ± 1*	40 ± 2	48 ± 1*
pO2	81 ± 3	108 ± 3*	83 ± 3	116 ± 3*
Somn.	N/A	1.6 ± 0.1	N/A	1.6 ± 0.1
AP/h	1.5 ± 0.5	5.2 ± 2.0*	2.0 ± 0.7	3.1 ± 1.0*
SRR/h	.02 ± .01	1.5 ± 0.3*	0.3 ± 0.2	1.3 ± 0.3*

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

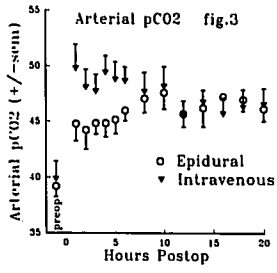
Apneic Episodes per Hour fig.1



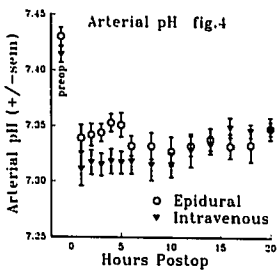
Slow Respiratory Rate fig.2



Arterial pCO2 fig.3



Arterial pH fig.4



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 bupivacaïne 0.5 % (18ml) with epinephrine is relatively low (1.67 µg/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 bupivacaïne 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 % bupivacaïne 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 bupivacaïne from 0 to 600 minutes after bupivacaïne administration. Plasma concentration was measured using gas chromatography. Non compartimental analysis was used to fit the data. Terminal half life (T 1/2 ß), total body clearance (CL), apparent volume of distribution (Vß), 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 ß was 149 ± 30 minutes ; CL was 6.7 ± 2.3 ml/min.kg ; Vß was 85.4 ± 19.5 litres. C MAX reached 2.09 ± 0.41 µg/ml ; T MAX was 12 ± 7 min.Bupivacaïne plasma concentration decrease is shown on figure 1.

For carotid endarterectomy, deep and superficial cervical plexus block with bupivacaïne 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

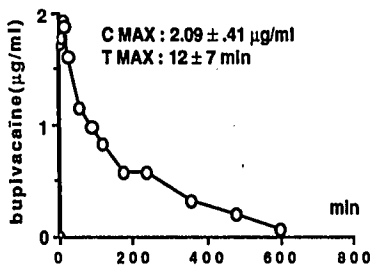

Figure 1 : Pharmacokinetics of bupivacaïne