

TITLE: HEMODYNAMIC, ELECTROPHYSIOLOGIC AND RESPIRATORY EFFECTS OF CUMULATIVE DOSES OF BUPIVACAINE IN ANESTHETIZED RATS.

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Introduction: We investigated in anesthetized rats how cumulative doses of bupivacaine (B) affect heart rate (HR) and rhythm, cardiac atrioventricular (AV) and intraventricular conduction, cardiovascular (CV) dynamics, respiratory rate (RR) and amplitude (RA). **Material and Methods:** Eight Sprague-Dawley rats weighing between 360-490 gr, anesthetized with 120 mg/100 g of intraperitoneal urethane, had tracheotomy, external jugular vein cannulation for drug injection and retrograde catheterization of the left carotid artery for the placement of a 2 mm Millar transducer in the aorta (Ao) for Ao systolic and diastolic blood pressure (SBP and DBP) and for peak Ao dP/dt monitoring. HR, PR and QRS durations were obtained from the ECG. The spontaneously breathing rats received air supplemented with O₂. After control (C), 5 min-spaced consecutive IV boluses of 1 (B₁), 2 (B₂) and 4 (B₄) mg/kg of B were given. Analysis of variance and Newman-Keuls test served for data analysis.

Results: Data recorded at C and at the end of each bolus of B are listed in the table. At C, pH was 7.4 +/- 0.04 and PaO₂ 169 +/- 47 torr. B induced overall statistically significant changes (ANOVA) in HR, peak Ao dP/dt, RR, RA, PR and QRS duration (P<0.01), SBP and DBP (P<0.05). At B₄, all ECG complexes were grossly abnormal and 2 rats were apneic. Four min later one of them had died and one had electromechanical dissociation. All other rats (6/8) survived.

Discussion: B affected A-V conduction first, then intraventricular conduction and LV dynamics. RA increased first by 80% of C, then dropped 30% below it when RR decreased at B₄. In the event of hypotension, it was always preceded by apnea.

	C	B ₁	B ₂	B ₄
HR (bpm)	343±16	333±14	323±13	205±38 ^{a,b}
SDP (mm Hg)	109±7	110±5	122±5	126±9
DBP (mm Hg)	59±7	59±6	71±6	78±9 ^c
peak Ao dP/dt (mmHg.sec ⁻¹)	6430±330	6350±260	4760±320 ^c	3730±310 ^{c,b}
PR [(msec), n=6]	50±2	57±2 ^c	67±2 ^{c,b}	
QRS (msec)	19±1	23±2	36±2 ^{c,b}	46±5 ^{c,b}
Resp. Rate (rpm)	123±8	118±7	89±7	73±16 ^c
Resp. Amp. (% of C)	100±0	140±10	180±20 ^c	70±30 ^a

c, C statistically significant difference from baseline at p < 0.05 and p < 0.01, respectively by Newman-Keuls test.

b, B statistically significant difference from previous event at p < 0.05 and p < 0.01 respectively by Newman-Keuls test.

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TITLE: FLUOROSCOPY OR CT SCAN FOR CELIAC PLEXUS BLOCK (CPB)?

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INTRODUCTION: CT scanning has been recommended to monitor the position of needle placement for CPB in the treatment of upper abdominal cancer pain,^{1,2} although comparison with less expensive radiologic techniques is lacking. Accordingly, we undertook this study to evaluate the accuracy of needle placement during CPB performed under either fluoroscopy or CT scan control.

METHODS: Subjects were 240 consecutive consenting patients who had CPB with 50% ethanol. Blocks were performed in the prone position on an X-ray table, using standard anatomical landmarks. The position of the needle tip was verified by either fluoroscopy or CT-scan. These results were tabulated for subsequent quality assurance studies. The choice of the radiologic technique depended upon the availability of equipment and personnel. Final needle position was confirmed by injecting 2 ml of contrast material and repeating the radiologic examination prior to neurolytic blockade. The incidence of both correct and incorrect needle placement under fluoroscopy or CT scan was compared using Chi Square analysis.

RESULTS: The data are summarized in the table. Comparing fluoroscopy with CT-scanning, there was no difference in the incidence of needle malposition (P=0.47). Likewise, no complication of CPB occurred in any patient; all were uneventfully discharged to home or to hospital ward. CT scanning identified a 13% incidence of kidney puncture and a 4% incidence of liver puncture: information not available by fluoroscopy.

RADIOLOGIC TEST:	FLUOROSCOPY	CT SCAN
Needle Placement	No. (%)	No. (%)
Correct	80 (56)	65 (68)
Too deep or lateral	44 (30)	24 (25)
Too medial	8 (6)	5 (5)
Into surgical clip	12 (8)	2 (2)

DISCUSSION: These data demonstrate that successful CPB can be accomplished with both fluoroscopy and CT-scanning. No complication related to visceral puncture was observed, although the incidence of visceral puncture could have been as great under fluoroscopic control as it was with CT-scanning. While CT scan affords greater anatomic detail, fluoroscopy requires neither the greater cost, nor the skill and time required by CT scanning. Nevertheless, fluoroscopy appears to provide an equal level of patient safety. Refs: 1) Moore DC et al: Anesth Analg 60:369-79, 1981. 2) Whizar-Lugo W et al: 9th World Congress of Anesth Abstracts: A0689, 1988.