TITLE: IS REPEATED EPIDURAL ANESTHESIA RELIABLE IN OBSTETRIC PATIENTS ?

AUTHORS: P. Narchi, MD, J. Hamza, MD, P. Jullien, MD, G. Lecoq, CRNA.
AFFILIATION: Département d'Anesthésie, Université Paris Sud, Hôpital Antoine Béclère, 92141 Clamart, France.

INTRODUCTION: The incidence of failure with repeated epidural anesthesia (EA) has been reported during lithotripsy (1). Furthermore, a recent study suggested a greater incidence of unilateral blocks in parturients following repeated EA (2). Thus, we conducted a prospective study in order to assess the incidence of technical problems and the efficiency of EA in parturients with (REA) or without (1EA) a history of previous epidurals.

METHODS: After institutional approval and over a one year period, all ASA-1 multiparous parturients who delivered vaginally under EA participated to this study. EA was performed in the sitting position, and 0.25% bupivacaine (8-14 ml) was injected in 3-5 ml increments through the needle followed by catheter insertion. The occurence of radicular pain or blood in the needle or the catheter was noted by the operator. 30 min after the injection, the extension of the block was assessed by the ability to distinguish cold sensation. In the postpartum period, a questionnaire was given which included items concerning unilateral pain during labor and the satisfaction of EA. Statistical analysis included Chi square test for qualitative data and Student's t-test as appropriate.

RESULTS: 54 parturients who did not respond to the questionnaire were excluded from the study. Demographic data of the remaining 328 parturients (REA= 183 and 1EA= 145) concerning age, weight, height and parity were similar in both groups as well as obstetrical conditions (table 1). The incidence of blood in the needle or the catheter was not statistically different between the REA group (18%) and the 1EA group (11%). However, radicular pain were significantly more frequent in the REA group (8.5%) than in the 1EA group (1.5%) ($p < 0.05$). The incidence of unilateral block is shown in Figure 1. Overall satisfaction was similar in REA (81%) and 1EA (84%) parturients.

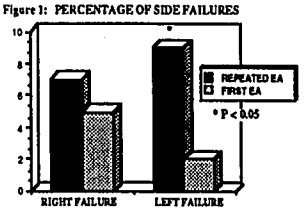
DISCUSSION: Our results of failed EA after repeated epidurals (16%) are close to those of Korbon et al (18%) as well as those of Withington et al (18.9%). This incidence of unilateral block after REA is significantly greater than after the first EA (16% vs 7%) and surprisingly involved more frequently the left side. The comparison of technical incidents showed more radicular pain in the REA group. In conclusion, since the decreased reliability of REA was also observed in parturients (as previously described during lithotripsy), we believe that mechanical problems related to epidural hematoma, inflammation or adhesions constitute possible explanations.

REFERENCES: 1/ Korbon GA et al: Anesth Analg 1987, 66: 669.
2/ Withington DE et al: Anesth Analg 1990, 70: S436

Table 1 : obstetrical conditions

	1 EA	REA
term (weeks)	39.6 ± 1	39.6 ± 1
birth weight (gr)	3425 ± 507	3416 ± 418
duration of labor (h)	5.5 ± 2.2	5.5 ± 2.7
mean dilatation (cm)	4.1 ± 1.6	4.2 ± 1.6
total dose of bupi (mg)	60 ± 23	60 ± 31

Figure 1: PERCENTAGE OF SIDE FAILURES



Title : **Differential Influence of Pregnancy on Limbs Venous Tone in Humans**

Authors: D Edouard*, B Pannier**, G London**, M Safar**

Affiliation : * Dpt Anesthésie, Hôpital Béclère, Clamart
**Ctre Diagnostic, Hôpital Broussais, Paris

To deal with apparent controversies[1], simultaneous forearm and calf hemodynamic determinations were prospectively done in normotensive women during and after pregnancy using standardized methods[2].

Methods. After approval by the IRB and obtening informed consent, 7 healthy women were studied during (3rd and 7th months) and after (at least 3 months) a normal pregnancy. Mean arterial pressure (MAP, Dinamap®), Heart Rate (HR, ECG), upper and lower limb hemodynamics (Venous Occlusion Plethysmography) were measured in left lateral position with right forearm and leg 10 cm above the heart level. Pneumatic cuffs were placed around arm and thigh while strain gauges were applied on the proximal part of forearm and calf. The cuffs pressures were simultaneously increased by small steps of 2.5 mmHg until the volume started to increase, then consecutively to 10, 15, 20, 25 and 30 mmHg. At each increase, pressure was kept constant until the limbs volume reached maximal value. The same technique was applied in the deflation phase. The pressure-volume (P-V) relationship showed a typical hysteresis and was analyzed to define parameters of venous distensibility and capacitance. Venous Tone (VT) is the slope of the linear part of P-V relationship. Minimal Occluding Pressure (MOP) is the intercept of this P-V relationship with pressure axis. Venous volume reached at the 2nd step of 30 mmHg (VV30) and the difference in Venous Volume at 20 mmHg during deflation and inflation (D20) quantify venous capacitance. Forearm and calf blood flows (BF) were simultaneously measured after VT. Results are expressed as mean ± SD and compared using ANOVA and Fisher test.

Results. If postpartum results are considered as quite similar to non-pregnant values, Table shows that upper and lower limbs hemodynamics vary in opposite manner during pregnancy. Indeed venous distensibility (↑VT) and capacitance (↓VV30) progressively decrease in the lower limbs while its tend to increase in the upper limbs. The increase in calf VT was correlated neither with weight gain, nor with calf BF.

Comments. This study demonstrates an active 'veno-constriction' in the lower limbs of pregnant women which may contribute to a shift of the increased blood volume towards the right heart and influences the cardiovascular effects of epidural anesthesia-induced sympathetic blockade since the latter mainly concerns the venous system[3].

	Post partum	3rd month	7th month
Weight (kg)	53±6	52±5	62±4 **
MAP (mmHg)	87±6	79±3	85±8
HR (bpm)	65±3	75±9 *	82±9 **
BF (ml/%)			
Forearm	3.38±1.05	3.35±1.05	5.83±3.07 *
Calf	2.37±0.69	2.57±0.78	2.56±0.86
VT (mmHg/ml%)			
Forearm	26.8±7.8	29.5±9.3	22.2±5.5
Calf	17.7±4.7	23.2±5.5 *	26.0±6.4 **
MOP (mmHg)			
Forearm	5.2±1.8	4.4±2.7	5.1±3.2
Calf	5.5±3.3	5.9±4.5	5.2±3.9
VV30 (ml%)			
Forearm	1.03±0.23	1.06±0.26	1.26±0.26
Calf	1.64±0.39	1.09±0.31	1.09±0.31 **
D20 (ml%)			
Forearm	0.29±0.13	0.35±0.09	0.46±0.25 *
Calf	0.68±0.12	0.67±0.21	0.46±0.24

* P<0,05 ** P<0,01 vs. Postpartum

References
1. Goodlin RC. Acta Obstet Gynecol Scand 65: 345-348, 1986
2. London G, Levenson J, Safar M et al. Am J Physiol 245: H194-202, 1983
3. Shimoshato S, Etsten BE. Anesthesiology 30: 619-628, 1969