

**TITLE:** EFFECTS OF URAPIDIL ON RIGHT VENTRICULAR (RV) FUNCTION.  
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An alternative for controlling immediate postoperative hypertension more specifically is the use of  $\alpha$ -adrenergic blockers. Urapidil is a new antihypertensive agent that acts through both central and peripheral  $\alpha$ -adrenergic inhibitory mechanisms. Previous studies have confirmed that its antihypertensive effect results from reduced total peripheral resistance; but increased venous capacitance is suspected. The effects on volumes and function of the right ventricle which regulate left ventricle preload are therefore of importance for the choice of urapidil as immediate postoperative antihypertensive agent. The purpose of this study was to assess RV volumes and function during both supine (S) and 45° headup tilt (T) positions.

10 ASA III patients with coronary artery disease (grade 1-2) and mild but established essential hypertension, scheduled for major urologic surgery gave their institutionally-approved written informed consent to enter this study which was performed before surgery. Monitoring was obtained from ECG, Swan-Ganz catheter equipped with a fast response-thermistor (93A-431H-7.5F Edwards Lab) and radial artery cannula. Blood samples were withdrawn for atrial natriuretic factor (ANF) determination. 30 minutes after catheter insertion, baseline data were collected in S and T positions. Following 0.4 mg/kg urapidil iv injection, three series of measurements (3, 8, 13 min) were made in S and T positions in a randomized sequence.

The main results expressed as % of control (mean  $\pm$  SD) are presented in the table.

		3 min	8 min	13 min
HR	S	6.7 $\pm$ 12.9	0.6 $\pm$ 12.7	1.7 $\pm$ 10.4
	T	7.6 $\pm$ 12.3	4.8 $\pm$ 12.8	3.5 $\pm$ 15.6
MAP	S	-15.3 $\pm$ 14 **	-11.7 $\pm$ 10.1 **	-12.0 $\pm$ 12.4 **
	T	-18.5 $\pm$ 13.4 **	-17.6 $\pm$ 12.9 **	-14.4 $\pm$ 14.5 **
SVRI	S	-8.8 $\pm$ 10.2 *	-3.1 $\pm$ 6.6	-3.6 $\pm$ 12.3
	T	-12.6 $\pm$ 14.6 *	-9.8 $\pm$ 14.4 *	-7.2 $\pm$ 11.1
SI	S	-11.6 $\pm$ 14.8 **	-8.3 $\pm$ 14.1	-8.6 $\pm$ 16.6
	T	-12.1 $\pm$ 15.3 **	-11.6 $\pm$ 13.0 *	-10.2 $\pm$ 12.4 *
MPAP	S	-21.0 $\pm$ 28.8 *	-20.1 $\pm$ 34.2 *	-17.2 $\pm$ 39.4
	T	-25.3 $\pm$ 21.4 *	-23.3 $\pm$ 44.2 *	-27.4 $\pm$ 26.7 *
RVEDVI	S	-6.7 $\pm$ 20.4	-10.7 $\pm$ 17.2	-10.1 $\pm$ 20.2
	T	-5.1 $\pm$ 12.2	-13.0 $\pm$ 14.1 **	-9.4 $\pm$ 16.1 *
RVESVI	S	-2.2 $\pm$ 22.5	-5.5 $\pm$ 21.0	-7.1 $\pm$ 19.5
	T	-12.4 $\pm$ 26.9	-7.2 $\pm$ 19.8	-7.2 $\pm$ 19.8
RVEF	S	0.7 $\pm$ 13.3	1.8 $\pm$ 17.2	2.8 $\pm$ 18.0
	T	-4.36 $\pm$ 11.4	2.03 $\pm$ 13.5	-0.48 $\pm$ 12.0
ANF	S			-15.7 $\pm$ 7.8
	T			-19.7 $\pm$ 5.4 *

SVRI: systemic vascular resistance index; RVEDVI and RVESVI: right ventricular end-diastolic and end-systolic volumes index; RVEF: right ventricular ejection fraction; \*  $p < 0.05$ , \*\*  $p < 0.001$  vs baseline (Dunnett t-test following multifactorial analysis of variance).

In both S and T position, the decrease in systemic arterial pressure was associated with reduction in systemic vascular resistance and with a decreased stroke index. No increase in heart rate was observed. RV performance remained unchanged. The decreased RVEDI and ANF during T strongly suggests a decreased venous return associated with peripheral venodilation and blood pooling.

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**TITLE:** INFLUENCE OF ISOFLURANE VS METHOHEXITONE ON CEREBRAL BLOOD FLOW VELOCITY AUTOREGULATION DURING CARDIOPULMONARY BYPASS  
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The following study was designed to investigate cerebral blood flow velocity (CBFV) autoregulation during low flow cardiopulmonary bypass (CPB) using two different anesthetic techniques.

After informed consent and with institutional approval CBFV of the middle cerebral artery was determined by transcranial Doppler technique (TC2-64B, EME) in 40 patients undergoing coronary artery bypass grafting. Anesthesia was induced and maintained with either Isoflurane/Alfentanil ( $n = 18$ ) or Methohexitone/Alfentanil ( $n = 22$ ). During CPB the Alfentanil infusion rate was 50  $\mu$ g/kg/h supplemented with 0.25 MAC Isoflurane (group 1) or 1 mg/kg/h Methohexitone (group 2). During stable CPB (NPT 28°C, alpha-stat  $\text{pCO}_2$  38 - 40 mmHg, Hct 24 Vol%) pump flow (Q) of the heart lung machine was reduced stepwise from 2.4 - 1.0 L/m<sup>2</sup>/min to reduce non-coronary blood flow. Before and during Q reduction CBFV and MAP were measured continuously in each patient of the groups. Data were analyzed using paired/unpaired t-test and linear regression technique.

The table shows the mean change of CBFV and MAP in response to a decrease in Q. NPT,  $\text{pCO}_2$ , Hct and demographic data were similar between groups. Q reduction of maximum 58 % from control (2.4 L/m<sup>2</sup>/min) results in a corresponding CBFV reduction of only 28 % (group 1) resp. 24 % (group 2) despite a simultaneously reduced MAP to 54 % resp. 59 %. During Q reduction we found no significant differences of CBFV autoregulation between groups.

For a pump flow range of 1.4 - 2.4 L/m<sup>2</sup>/min there was no significant correlation between CBFV and Q for group 1 ( $r = 0.150$ ) as well as group 2 ( $r = 0.109$ ).

Our results demonstrate a safe pump flow range of 1.4 - 2.4 L/m<sup>2</sup>/min with preserved CBFV autoregulation without significant differences between Isoflurane or Methohexitone supplemented Alfentanil anesthesia.

		Q (L/m <sup>2</sup> /min)					
		2.4	2.0	1.8	1.6	1.4	1.0
CBFV (cm/sec)	Groups						
1	29	29	27*	26*	25*	23*	21*
	(11)	(10)	(10)	(8)	(8)	(7)	(7)
2	26	25*	25*	24*	23*	21*	20*
	(9)	(8)	(8)	(8)	(7)	(6)	(5)
MAP (mmHg)	59	53*	49*	46*	41*	37*	32*
	(12)	(11)	(12)	(12)	(12)	(11)	(9)
2	56	50*	47*	45*	41*	37*	33*
	(10)	(10)	(9)	(9)	(8)	(11)	(7)

Table: Results are mean ( $\pm$  SD). Significant differences ( $p < 0.05$ ) vs control (Q = 2.4 L/m<sup>2</sup>/min) within (\*) groups.  
 MAP: mean arterial pressure