

TITLE: PERIOPERATIVE MYOCARDIAL ISCHEMIA IS ASSOCIATED WITH ELEVATED LEFT VENTRICULAR WALL MASS
AUTHORS: JR Busse, M.D., JE Ellis, M.D.
AFFILIATION: Dept of Anesthesia and Critical Care, The University of Chicago, Chicago IL 60637

Elevated left ventricular wall mass (LVWM) is associated with adverse long-term clinical outcome in hypertensive men.¹ Cardiac complications produce most morbidity and mortality after vascular surgery. EKG criteria are unreliable for assessing LVWM (sensitivity = 21 -50 %), while echocardiography predicts postmortem LVWM (sensitivity = 93%).² We hypothesized that patients with elevated LVWM would be prone to perioperative myocardial ischemia (PMI).

After IRB approval, 29 patients undergoing vascular surgery or other non-cardiac surgery with significant risk factors for coronary artery disease were studied. Patients with LBBB were excluded, but a repolarization pattern on EKG was not a criteria for exclusion. Monitors for PMI included leads II and V₅ of the EKG and the short-axis view of the LV at the mid-papillary muscle level. Recordings were obtained upon arrival (EKG), before and after intubation (EKG), before and after incision (EKG and TEE), 1 hr after incision (EKG and TEE), at closure (EKG and TEE), upon leaving the OR (EKG), and in the recovery room (EKG).

Videotapes were analyzed offline to measure LVWM.

In the 4 chamber view, the length of the LV cavity from the mitral annulus to the endocardial border (L_{endo}) and to the epicardial border (L_{epi}) were measured. In the short axis view, end-diastolic areas of the LV were measured for the cavity (A_{cav}) and the muscle plus cavity (A_{musc}). LV mass, normalized for BSA was calculated as 1.055 (5/6) [(A_{musc})(L_{epi}) - (A_{cav})(L_{endo})]/BSA.³

TEE videotapes were analyzed off-line for the presence of PMI by an observer unaware of the clinical scenario. Another observer analyzed the EKGs for ST segment depression at 80 msec after the J point.

PMI was common in these patients. 11 patients had PMI by EKG, and 14 had PMI by TEE. The presence (22 patients) of PMI (determined by either or both methods) was associated with a higher LVWM than was the absence (9 patients) of an intraoperative ischemic event: LVWM = 127 ± 11 (SEM) in ischemic patients and 87 ± 12 in non-ischemic patients (p <0.05 by T test).

PMI appears to be associated with higher LVWM. While this may be due to poor subendocardial perfusion, further work is needed to show that elevated LVWM and associated EKG changes are associated with a higher incidence of morbid postoperative complications.

REFERENCES

1. Ann Int Med 105:173-178, 1986
2. Circulation 63:1391-1397, 1981
3. Circulation 67:348-352, 1983

Title: OUTCOME ANALYSIS OF HYPOTENSIVE ANESTHESIA IN HYPERTENSIVE PATIENTS
Authors: N.E. Sharrock, M.B. ChB., B. Urquhart, B.S.
Affiliation: Dept. of Anesthesiology, The Hospital for Special Surgery, Cornell University Medical Center, New York, N.Y. 10021

The use of hypotensive anesthesia in hypertensive (HT) patients is considered controversial because of the potential risk of perioperative stroke, myocardial infarction(MI), or acute renal failure. A prospective study was performed to assess outcome following hypotensive anesthesia for total hip replacement (THR) in 987 consecutive patients who received epidural anesthesia for primary (n= 795), revisions (n=120) or bilateral THR's (n= 72). 353 patients had a preoperative diagnosis of hypertension (HT), 634 were non-hypertensive(Norm). Patient characteristics and comorbidities are shown below. (Table 1)

	Hypertensive	Normotensive	Total
	353	634	987
Age (yrs)	68.4	60.1	63.0
Prior M.I.	33 (9%)	30 (5%)	7%
Other ASHD	31 (9%)	49 (8%)	8%
History CHF	13 (4%)	3 (0.4%)	2%
Diabetes	22 (6%)	20 (4%)	4%
Prior Stroke	4 (1%)	4 (0.6%)	1%
Abnormal EKG (BBB, LVH, Q s)	81 (23%)	96 (15%)	18%
ASA 3 or 4	118 (34%)	99 (16%)	22%

All patients received lumbar epidural anesthesia with 15-30 ml. 0.75% bupivacaine or 2% lidocaine to achieve T4 level or above, intraoperative sedation with midazolam and/or fentanyl and nasal oxygen throughout. Patients were monitored with EKG(V5) , pulse oximetry and radial artery monitoring . Trend data was recorded for subsequent analysis. Radial artery pressures were recorded by the anesthesiologist 1) on arrival in the OR; 2) prior to inserting femoral cement; 3) lowest intra-operative measurement . (Table 2)

	Hypertensive	Normotensive
Initial Systolic (mmHg.)	162.6	139.1
Initial Mean	105.6	92.8
Lowest Systolic	70.0	67.6
Lowest Mean	51.0	48.6
Pre Cement Systolic	88.7	83.6
Pre Cement Mean	62.0	58.6

Maximal reductions in systolic pressure from baseline were 57% in HT an 52% in Norm .

Outcome: There were 3 postoperative deaths: 1 aspiration (36 hours postoperatively), 1 acute pulmonary embolus (5 days postoperatively) and 1 following an anterior wall M.I.. There was one other Q Wave infarction (24 hours postoperatively). Although both patients with Q wave infarcts were hypertensive both had prior histories of ischemic heart disease. No patients sustained postoperative stroke nor acute renal failure.

Conclusion: Hypotensive anesthesia for THR is associated with a low risk of perioperative complications in patients with controlled hypertension.