

**COMPARATIVE RESPONSES OF CORONARY FLOW RESERVE AND THE NEW INSTANTANEOUS HYPEREMIC FLOW VERSUS PRESSURE SLOPE INDEX TO TACHYCARDIA, INCREASED CONTRACTILITY, AND VOLUME LOADING.**

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We studied the influence of tachycardia (T), dobutamine infusion (DobI = 10ug/kg/min) and 500cc saline volume load (VL) on traditional coronary flow reserve (CFR) (= ratio of hyperemic flow to basal flow) and the instantaneous hyperemic flow versus pressure slope index (iHFVP) (= the slope of the instantaneous relation between diastolic hyperemic coronary flow and diastolic aortic pressure normalized by perfusion bed weight) in dogs. Hyperemia was induced by intravenous adenosine infusion (AdenI = 1mg/kg/min). T was induced by atrial pacing at approximately 10 beats per minute above baseline (B). Mean aortic pressure (MAOP) was kept nearly constant during interventions (INT) by manipulating an aortic clamp or venal caval snare. Full hemodynamic recovery was allowed between INT and AdenI. Parameters directly measured included HR, phasic and MAOP, LVEDP, dP/dt, and phasic and mean coronary flow. T, DobI and AdenI induced expected significant changes in heart rate, LVEDP and dP/dt. RESULTS (mean  $\pm$  S.D.):

INT	N	CFR:B	CFR:INT	p	iHFVP:B	iHFVP:INT	p
T	32	3.7 $\pm$ 1.2	3.0 $\pm$ 1.2	<.0001	7.4 $\pm$ 3.1	7.3 $\pm$ 3.3	NS
DobI	32	3.2 $\pm$ 1.3	4.3 $\pm$ 1.5	=.0002	7.5 $\pm$ 3.1	7.3 $\pm$ 3.4	NS
VL	20	3.2 $\pm$ 1.3	2.7 $\pm$ 0.8	=.06	7.4 $\pm$ 3.2	7.4 $\pm$ 3.4	NS

Thus, the iHFVP measurement offers an improved assessment of vascular reserve over traditional CFR because it is independent of changes within the ranges studied for heart rate, contractility, and volume loading which can be expected to occur commonly in clinical situations.

**EXERCISE TEST AS PREDICTOR OF THE EFFECTS OF PHYSICAL TRAINING ON SURVIVAL IN POST-HI PATIENTS.**

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The identification of pts who might benefit most from an exercise program after an acute myocardial infarction (MI) has important clinical implications. Accordingly, a maximal exercise test (EX) was performed in 257 consecutive pts 4 weeks after a first uncomplicated MI. All pts were randomized in 2 groups: 126 pts received a 4 week-long exercise training program (ETR group) whereas 131 pts did not (no-ETR group). Coronary arteriography was performed in all pts. Clinical, exercise and arteriographic findings were comparable in the 2 groups. The long term prognosis was assessed after an average follow-up of 35 months. In the entire population, 2 exercise variables were associated with a higher mortality: a peak EX double product <25000 mmHg x bpm (p<.02) and a <30 mmHg increase in systolic blood pressure (p<.01). The same variables were significantly related to prognosis only in the no-ETR group. ETR group high risk pts (identified by EX) had a significantly better survival (p<.05) than high risk pts who were not submitted to the rehabilitation program.

In conclusion: Exercise training program improves survival after an uncomplicated myocardial infarction in high risk pts identified by a maximal exercise test.

**SHOULD THE MORBIDLY OBESE BE DENIED CORONARY BYPASS ?**

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Morbidly obese patients (MOP) (>1.5 X Ideal Body Weight) are thought to be at increased risk for coronary bypass (CABG). As there is no objective evidence to support this, the outcome and hospital course of 56 MOP were compared to age, sex and height matched controls all operated on between 11/85 and 4/90. Analysis by t-test and Chi-square.

The groups differed in weight (111 $\pm$ 11 v 76 $\pm$ 11 kg,+) and body mass index (38 $\pm$ 3 v 26 $\pm$ 2, +). The MOP have more associated disease such as diabetes (39 v 14%,\*), however fewer were smokers (39 v 68%,\*). The internal mammary artery was used more frequently in MOP (53 v 35%, \*). However, when the MOP were compared to controls, the number of grafts (2.8 $\pm$ .9 v 2.9 $\pm$ .8) and ejection fractions (62 $\pm$ 18 v 67 $\pm$ 16%) were similar. Complications including sepsis, pneumonia, M.I., sternal dehiscence, wound infection and ventilator support >7 days occurred in 24% of MOP and 15% of controls and contributed to an increased stay (16 $\pm$ 15 v 11 $\pm$ 10 days, \*). The mortality for MOP (2/55) and controls (0/55) was similar.

Compared to all isolated CABG pts (1569) operated on in the same period, the MOP tended to be younger (60 $\pm$ 7 v 64 $\pm$ 9 yrs) and likely female (44 v 22%) but the number of grafts were similar.

We concluded that morbidly obese patients can be operated on safely in spite of their greater incidence of associated disease. However, their length of stay is prolonged. (\*p<.001, \*p<.05,  $\pm$  SD).

**Lp(a) IS RELATED TO COMPLETE OBSTRUCTION OF CORONARY ARTERIES IN MEN AND TO PARTIAL AS WELL AS COMPLETE OBSTRUCTION IN WOMEN**

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Lp(a) is a lipoprotein particle with atherogenic and thrombogenic potentials. While in coronary angiographic studies it was shown to be an independent risk factor of coronary atherosclerosis (CA), its relationship to complete occlusion of coronary arteries was not specifically explored. Therefore, using a specific and sensitive radioimmunoassay, we studied its relationship to occlusive as compared to less advanced coronary atherosclerosis (CA) in 626 men and 333 women, undergoing diagnostic coronary angiography. They were separated in 4 groups: 1) absence of CA; 2) non-significant CA; 3)  $\geq$ 50% stenoses with partial obstruction; 4) occlusion or complete obstruction of coronary arteries. There were no significant differences in Lp(a) serum levels between patients free of CA (45 men; 73 women) and patients with non-significant CA (27 men; 58 women), neither in men, nor in women. However in men, as compared to patients of group 1, patients with complete occlusion (group 4; n=269) had significantly higher Lp(a) levels (0.44 vs 0.30 g/L; p<.05). Among women, as compared to group 1, patients with partial (group 3; n=132) or complete obstruction (group 4; n=70) had significantly higher Lp(a) levels (0.51 and 0.53 vs 0.26; p<.001). These results support the view that Lp(a) is particularly related to severe CA and possibly to thrombotic occlusion of coronary arteries, explaining its role as a risk factor for myocardial infarction.