

**REPERFUSION IMPROVES SURVIVAL IN PATIENTS WITH  
CARDIOGENIC SHOCK AFTER ACUTE MYOCARDIAL IN-  
FARCTION**

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Recent studies have suggested that reperfusion (REP) therapy reduces mortality in pts with cardiogenic shock (CS) after acute myocardial infarction (AMI). It is possible, however, that the reported mortality rates in these studies are lower due to selection of pts most likely to benefit from reperfusion therapy. We therefore examined a population of 88 consecutive AMI pts in 1988 with sustained hypotension (SBP<90 mm Hg) and evidence of hypoperfusion or CI<2.2 and PCW>18. The overall in-hospital mortality rate was 42%. REP was documented in 52/69 pts (75%) who underwent angiography. Spontaneous REP occurred in 10 pts. Intervention was attempted in 49 of 78 pts (63%), with documented successful REP in 42 (86%): 22 by thrombolytic therapy (TT), 17 by PTCA ± TT, and 3 by CABG. The most common reasons for lack of attempted intervention (TT, PTCA, or CABG) were hemodynamic instability, severity of medical condition, and anatomic unsuitability. Pts with angiographic evidence of REP were less likely to die in hospital (35% vs 71%, p=.009). Secondary determinants of mortality were failure to respond to initial pharmacologic therapy (SBP>90) within 60 minutes of onset of CS (53% vs 29%, p=.02), age (69 vs 61 yrs, p<.001), altered sensorium (70% vs 25%, p<.001), respiratory failure (50% vs 27%, p=.04), worst CI (1.5 vs 1.9, p=.04), and worst AVO<sub>2</sub> difference (8.1 vs 7.3, p=.01). 40 pts survived to discharge. At last follow-up after discharge (mean±SD 215±149 days), pts with REP continued to have lower mortality (2.4% vs 60%, p=.09).

These data suggest that an aggressive interventional strategy to establish reperfusion in pts with CS is associated with improved in-hospital and long-term survival.

Wednesday, March 21, 1990

8:30AM-10:00AM, Room 26

**Epidemiology: Therapeutic Options****CAUTION: HEPARIN MAY MARKEDLY AFFECT CARDIOVASCULAR RISK  
ASSESSMENT**

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Hospitalization is often used as a time to screen patients for lipid cardiovascular risk. Because heparin is often used in patients with coronary disease, and because heparin enhances the metabolism of triglycerides (TG) we evaluated the effects of heparin on total cholesterol (TC), TG, LDL-C, and HDL-C in 16 stable patients admitted for catheterization. We measured lipids before and at 5 min, 30 min, 60 min, and 24 hrs after heparin administration (A single 5000u IV bolus).

**Results:**

Mean±SEM	PRE	5min	30min	60min	24 hrs	MaxΔ	%Δ
TG	169±31	140±29*	88±16*	118±33*	174±27	-64±8*	-38
TC	191±10	178±10*	161±10*	162±12*	166±9*	-30±4*	-16
LDL-C	125±8	118±8*	112±9*	110±11*	101±7*	-21±4*	-17
HDL-C	32±3	32±2	31±2	28±2	30±2	-1±2	-3
TC/HDL	6.9±1.9	6.1±1.4*	5.4±1.5	6.1±1.8	6.0±1.5	-1.4±1.6*	-20

(\* = p<0.01) Maximum changes (Δ) included a decrease of 16% in TC with an even greater fall in LDL-C and TG (-17% and -38%); HDL-C decreased by 3%, however, TC/HDL fell by 20%. There was marked variability of HDL-C in response to heparin (-31% to +144%) that could not be explained by heparin dose, duration of therapy, other drugs or clinical factors. We conclude 1) Heparin profoundly alters serum lipid profiles; an effect which persists for at least 24 hours; accordingly, 2) lipid risk factor screening should not occur while patients are on, or shortly after, heparin therapy; and 3) Heparin's favorable effect on TG, LDL-C, and TC/HDL-C ratio merit further study, as heparin could be useful modality for the treatment of certain lipid disorders.

**RELATIONSHIP BETWEEN LIPID VALUES AND ANATOMIC CORONARY  
ARTERY DISEASE IN PATIENTS WITH TOTAL CHOLESTEROL BELOW  
200 mg/dl.**

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The purpose of this study was to examine the relationship between lipid levels and anatomic coronary artery disease (CAD) in pts with a "desirable" total cholesterol (TC) level of < 200 mg/dl. Lipid profiles were obtained on 200 pts undergoing diagnostic coronary angiography. Of the 200 pts, 72 (36%) had TC < 200 mg/dl. Among these 72 pts, CAD, defined as ≥ 25% narrowing in a major coronary vessel (V), was absent in 15 (21%) and present in 57 (79%). Mean (±SD) TC, LDL, HDL, total triglycerides (TRIG) (mg/dl) and TC/HDL ratio were:

	TC	LDL	HDL	TRIG	TC/HDL
CAD ABSENT	179±17	110±21	49±14	119±55	4.0±1.3
CAD PRESENT	173±22	113±24	39±12**	148±106	4.8±1.5*

\*p<0.05, \*\*p<0.01 versus CAD ABSENT

The presence, extent (number of vessels), and severity (maximum narrowing) of CAD did not correlate with TC, LDL, or TRIG levels, while HDL was inversely related to the presence (r=-.31, p<.01), extent (r=-.36, p=.002), and severity (r=-.42, p<.001) of CAD in pts with TC < 200 mg/dl. Multivariate analysis identified HDL as the variable most significantly (p<0.01) related to the presence and severity of CAD. Of 35 pts with TC < 200 mg/dl and HDL < 40 mg/dl, 30 (86%) had CAD and of these 30 pts, 20 (67%) had 3 or 4 V CAD.

**Conclusions:** In pts with total cholesterol < 200 mg/dl:

- 1) Low HDL correlates with the presence, extent, and severity of CAD.
- 2) Coronary angiography frequently reveals anatomic CAD.
- 3) HDL level should be measured in all pts undergoing cholesterol screening.

**CHANGES IN THE OBESITY-SERUM LIPID RELATIONSHIP WITH  
AGE -- THE BOGALUSA HEART STUDY**

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Obesity has been noted to be a predictor of cardiovascular disease in adults; however, the relationships have been inconsistent in children. The relation of obesity to fasting serum lipid and lipoprotein levels was examined in 3,311 children (5-26 years of age) from a total biracial community. Both ponderosity and central body fat were related to lipid and lipoprotein levels separately by sex for black and white subjects across four age groups (5-10 yrs, 11-16 yrs, 17-22 yrs, and 23-26 yrs), excluding females using oral contraceptives or who were pregnant. Overall, the associations increase with age, being most prominently noted in white males. The strong positive relation of ponderosity to serum total cholesterol was indicated in the older age groups with correlation coefficients ranging from r=.08 (NS) in the youngest black males to r=.38 (p=.0001) in white males aged 17-22 years. A negative association was noted between ponderosity and high-density lipoprotein cholesterol with correlation coefficients ranging from r=-.08 (NS) in black females aged 17-22 years to r=-.39 (p=.0001) in the oldest white males. Similar results were seen using subscapular skinfold thickness as a measure of central obesity. Intervention and education programs aimed at reducing obesity at younger ages may be useful in reducing serum lipid and lipoprotein levels during young adulthood.