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Prevention

AMELIORATION OF CHOLESTEROL EFFLUX CAPACITY BY CARDIAC REHABILITATION IN PATIENTS WITH ACUTE CORONARY SYNDROME

Poster Contributions

Poster Hall B1

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Session Title: Lipids, Novel Therapies and Acute Coronary Syndromes

Abstract Category: 23. Prevention: Rehabilitation

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Background: It has been reported that exercised-based cardiac rehabilitation (CR) can increase HDL-C in patients with coronary artery disease (CAD). However it remains unclear how CR ameliorate HDL function.

Methods: We measured cholesterol efflux capacity (CEC) in 30 patients with acute coronary syndrome (ACS) and 17 age-matched hypertensive patients without CAD as controls. The patients with ACS were received successful percutaneous coronary intervention on admission and participated in a 6-month CR program. We examined flow-mediated vasodilation (FMD) of brachial artery and cardiopulmonary exercise tests at the beginning and at the end of the CR program. To validate CEC from apolipoprotein B-depleted serum, we used a cell-based cholesterol efflux system of 3H-cholesterol-labeled J774 macrophages.

Results: (Table): Although neither HDL-C nor apolipoprotein A-1 changed during CR, CEC statistically ameliorated in only ACS group ($p < 0.01$). Increases in CEC were not associated with %increases in HDL-C, FMD, and peak VO₂.

Conclusion: CR significantly increased CEC in the patients with ACS. These results suggest that CR can improve HDL function such as CEC, which result in the secondary prevention of ACS.

Table Clinical characteristics

	Cardiac rehabilitation		Control	
	Baseline	Follow-up	Baseline	Follow-up
Number	27 male / 3 female		6 male / 11 female	
Age, years	66 [12.2]		62 [13.9]	
BMI, kg/m ²	24.3 [4.4]		25.3 [4.0]	
Hypertension, n (%)	22 (73%)		17 (100%)	
Diabetes, n (%)	6 (20%)		2 (11%)	
Lipid-lowering drug user, n (%)	11 (36%)	30 (100%)	4 (23%)	5 (45%)
Blood examination				
Non HDL-C, mg/dl	139.4 [36.8]	104.8 [23.8]	150.8 [31.3]	137.2 [28.8]
LDL-C, mg/dl	118.2 [33.5]	83.3 [20.7]	117.4 [24.0]	107.2 [24.3]
HDL-C, mg/dl	45.7 [11.0]	46.5 [8.2]	54.2 [14.7]	56.6 [14.6]
ApoA-1, mg/dl	123.6 [24.3]	128.7 [18.4]	144.9 [26.1]	141.0 [26.8]
Cholesterol Efflux Capacity, %	5.54 [1.40]	5.94 [1.42] ^o	5.75 [0.80]	6.19 [1.07]
Cardiopulmonary exercise test				
Anaerobic threshold (VO ₂), ml/min/kg	12.0 [1.7]	12.6 [2.8]	N/A	N/A
Peak VO ₂ , ml/min/kg	17.6 [3.5]	19.4 [4.8] ^o	N/A	N/A
flow-mediated dilation, %	3.82 [2.54]	4.37 [2.84]	N/A	N/A

Data are expressed as Mean [SD]. ^op<0.05 (Student's t test)

N/A = not available