Long-Term Efficacy of Low-Density Lipoprotein Apheresis on Coronary Heart Disease in Familial Hypercholesterolemia

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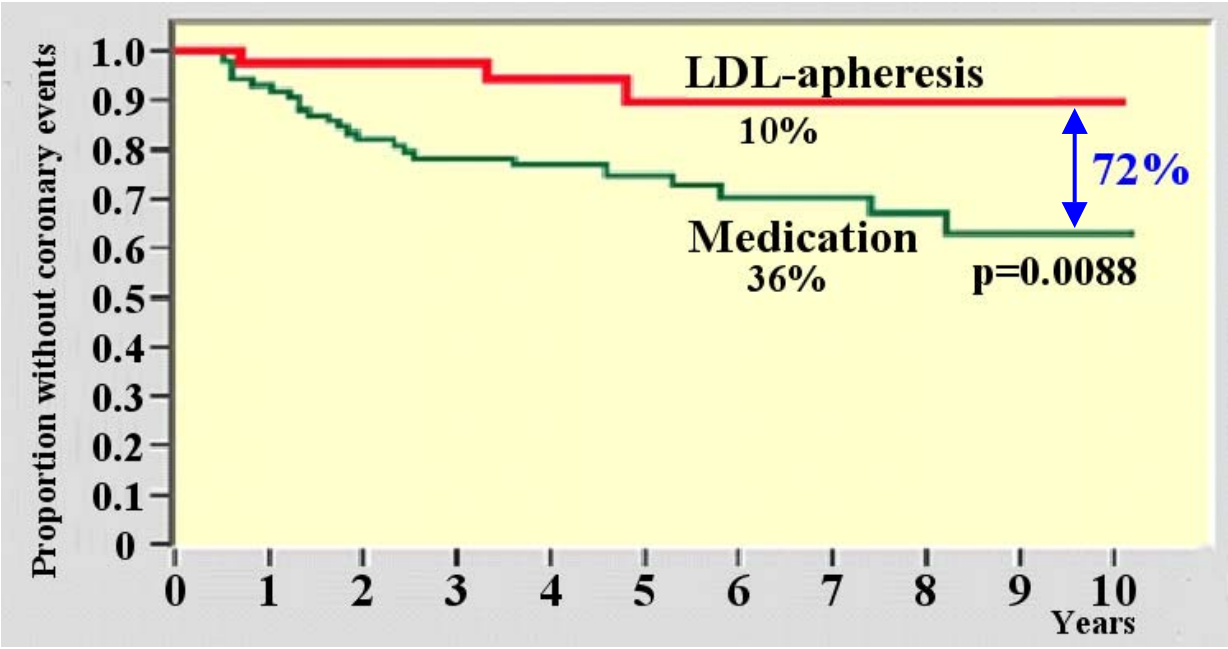
Summary: The long-term efficacy of low-density lipoprotein (LDL) apheresis on coronary heart disease (CHD) in familial hypercholesterolemia (FH) was studied. Of 130 FH heterozygotes with CHD documented by coronary angiography, 87 had been treated with drugs alone (medication group), and 43 with LDL-apheresis combined with cholesterol-lowering drugs (LDL-A group). Serum lipid levels and the rate of coronary events including nonfatal myocardial infarction, percutaneous transluminal coronary angioplasty, coronary artery bypass grafting and death from CHD in each group were compared after approximately 6 years.

LDL apheresis significantly reduced LDL cholesterol from 287±67 to 121±31 mg/dL (58%) compared with medication group, from 233±51 to 167±59 mg/dL (28%). With Kaplan-Meier analyses, the rate of total coronary events was 72% lower in the LDL-A group (10%) than in medication group (36%) (p=0.0088).

Conclusion: LDL-apheresis is effective as treatment of CHD in FH heterozygotes, and may become the therapy of choice in severe types of FH.



Kaplan-Meier curves due to all coronary events in FH heterozygotes treated with LDL-apheresis combined with cholesterol-lowering drugs or medication alone.

Clinical Characteristics of Patients

	LDL-A (n=43)	Medication (n=87)	p value*
Age (years old)	57±10	59±12	
Gender Female	11(26)	7(22)	
Male	32(74)	25(78)	1.000
Risk factors			
Systemic hypertension	7(16)	15(17)	1.000
Diabetes mellitus	12(28)	18(21)	0.382
Smoking	4(9)	23(26)	0.024
Cardiovascular Dis.			
Angina pectoris	26(60)	36(41)	0.061
OMI	21(49)	28(32)	0.084
PTCA	4(9)	8(9)	1.000
CABG	11(26)	11(13)	0.082
No. of Vessel disease(VD)			
1VD	17(40)	31(36)	0.702
2VD	14(33)	24(28)	0.682
3VD	12(28)	28(32)	0.689
ATT(mm)	16.5±6.6	12.2±3.7	<0.001**
Lipid-lowering Drug			
Statin	37(86)	67(77)	0.254
Probucol	25(58)	54(62)	0.705
Cholestylamine	11(26)	19(22)	0.662
Fibrate	2(5)	7(8)	0.717
Treatment period (years)	5.9±3.4	6.1±3.0	0.740**

( ): percentage
Values are expressed as mean±SD.
*: Fisher's exact test and **: Unpaired Student's t test
p<0.05 : significant differences
OMI: Old myocardial infarction
ATT: Achilles Tendon Thickness

Change in cholesterol levels

	LDL-A (n=43)	Medication (n=87)	p value**
Total cholesterol			
Baseline (mg/dL)	359±66	307±48	<0.0001
On treatment (mg/dL)	170±30*	229±61	<0.0001
% reduction	53	25	
LDL cholesterol			
Baseline (mg/dL)	287±67	233±51	0.00012
On treatment (mg/dL)	121±31*	167±59	<0.0001
% reduction	58	28	

*: Time averaged concentrations in the LDL-apheresis group.
**: Unpaired Student's t test; p<0.05: significant differences
All data are expressed as mean±SD
mg/dL=mmol/L×38.67