

Homocystein and lipid fractions association in patients on hemodialysis

¹Mašnić Fahrudin, ¹Bećiragić Amela, ¹Ćorić Aida, ¹Ajanović Selma, ¹Prohić Nejra, ¹Mutevelić-Turković Alma

¹Clinic for hemodialysis, Clinical Centre University of Sarajevo, Bosnia and Herzegovina

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Goal: Elevated homocysteine levels induce oxidative stress and can be a sign of a coronary disease. Accompanied with elevated lipid fractions, especially LDL and VLDL may have a great impact on the development of atherosclerotic processes in blood vessels in long-term hemodialysis (HD) patients. Aim of the study was to examine association between increased concentration of total homocysteine and lipid fractions in patients on HD.

Table 1. Comparisons of different variables between groups

	Group on HD (n=40)	Control group (n=43)	p-value
Total homocysteine	25,6 (20,56 - 34,25)	11,435 (10,02 – 14,25)	<0,001
Total cholesterol	4,314 ± 1,071	6,062 ± 0,880	<0,001
LDLc	2,663 ± 0,997	4,123 ± 1,105	<0,001
HDLc	0,870 (0,730 – 1,030)	1,095 (0,937 – 1,327)	<0,001
Triglycerides	1,620 (1,040 – 2,140)	1,785 (1,250 – 3,000)	0,082
VLDLc	0,740 (0,470 – 0,990)	0,945 (0,550 – 1,290)	0,035

Results: In our study HD patients had significantly higher homocysteine values compared to the control group ($p < 0.05$) (Table 1). Groups didn't have significant age differences which shows homogeneity between groups ($p = 0.746$). Patients in control group had significantly higher values of total cholesterol, LDLc, HDLc and VLDLc (Table 1). Spearman correlation didn't show significant relationship between homocysteine and lipid parameters in the group of subjects on HD: HDLc ($p = 0.99$), cholesterol ($p = 0.76$), LDLc ($p = 0.92$), VLDLc ($p = 0.78$) and triglycerides ($p = 0.83$). The relationship between homocysteine and lipid parameters in the control group was also not significant: HDLc ($p = 0.34$), cholesterol ($p = 0.41$), LDLc ($p = 0.32$), VLDLc ($p = 0.63$) and triglycerides ($p = 0.32$). There was no significant difference in triglyceride values between groups ($p < 0.05$).

Materials and methods: Our study is a cross-sectional study that included 83 subjects. 40 subjects were on HD at the Clinic for Hemodialysis, Clinical Center University of Sarajevo with dialysis vintage of more than six months. Second group were apparently healthy controls with 43 subjects. Lab data used in the study were: total homocysteine, cholesterol, HDL, LDL, VLDL, triglycerides. The data were processed in SPSS.

Table 2. Relationship between total homocystein and lipid profile parameters between groups (Spearman correlation)

	Group on HD (n=40)		Control group (n=43)	
	rho	p-value	rho	p-value
HDLc	-.001	0,993	-.152	0,349
Cholesterol	-,047	0,765	-,134	0,410
LDLc	.01,5	0,923	,161	0,321
VLDLc	-,272	0,078	,077	0,635
Tryglicerides	-,016	0,083	,055	0,321

Conclusion: Although the study was negative, these results correspond to other studies which show that elevated homocysteine levels can increase cholesterol and triglycerides but in the intracellular space, while being only slightly changed in extracellular space, nevertheless having an impact on atherosclerotic processes in blood vessels.

References:

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