THE ASSOCIATION OF DYSLIPIDEMIA WITH INTRAPERITONEAL INFLAMMATION & PERITONEAL DIALYSIS TECHNIQUE SURVIVAL

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INTRODUCTION AND AIMS: The problem of dyslipidemia among peritoneal dialysis (PD) patients is out of several levels of plasma lipoprotein and is limited not only by cardiovascular risk, but also can influence peritoneal dialysis method’s survival. However, few data are available, devoted to the effects of dyslipidemia on local production of pro- and anti-inflammatory mediators. Therefore the aim of our work was to define the association of dyslipidemia with intraperitoneal inflammation and PD technique survival.

METHODS: We have held a prospective cohort observational study involving 40 PD patients that were treated with continuous ambulatory peritoneal dialysis (CAPD) no less than 3 months (median was 40.4 [28.3-64] months. Among the people examined there were 27/40 (67.5 %) of men and 13/40 (13.5 %) of women. Average age was 49.3 ± 12.7. By nosological background patients were separated as follows: 30/40 (75 %) patients had non-diabetic kidney diseases and 10/40 (25 %) patients with diabetes mellitus. The patients did not differ on age and by duration of disease (50.8 ± 12.5 vs 45.6 ± 12.3; p = 0.39 and 13 [5.02-23.5] vs 14.4 [13.7-30.05] months; p = 0.36, respectively). The adequacy of dialysis was determined by measuring the total weekly creatinine clearance (CrCl) and total weekly urea clearance (Ko/V). All patients were determined the blood lipid spectrum: total cholesterol level (LDL), low cholesterol (LDL–C) and high (HDL cholesterol) density, triglycerides (TG) and atherogenic index (AI). The IL-10, TNF-α and MCP-1 levels were studied in PD effluent (PDE) of 20 patients using ELISA. For the statistical analysis, we use the Student’s t-test, nonparametric (U-test) Mann-Whitney and Pearson’s rank correlation test. The average values (M) and standard deviation (SD) or the median (Me) and interquartile ranges (Q25; Q75) were calculated according to a normal distribution. PD technique failure was defined as discontinuation of PD due to uncontrolled volume overload with 2.5 % dextrose solution or decrease of total weekly Ko/V less than 1.7. All the statistical analyses were performed using MedCalc.

RESULTS: Dyslipidemia defined as increase of atherogenic lipoprotein fractions and inhibition of HDL cholesterol was identified in 70 % of the patients. LDL cholesterol level and, accordingly, the AI were significantly dependent on the duration of PD treatment (R² = 2.18 ± 0.15 (95 % CI 1.87; 2.5), p < 0.0001 and R² = 2.77 ± 0.27 (95 % CI 2.2; 3.3), p < 0.0001). The blood levels of total cholesterol, LDL-C and TG in the patients with diabetes were significantly higher compared with the diabetes-free patients (p = 0.007, p = 0.001 and p = 0.02, respectively). Reducing the HDL cholesterol level was associated with high intraperitoneal production of pro-inflammatory mediators TNF-α (r = 0.55; p = 0.001) and anti-inflammatory IL-10 (r = 0.78; p < 0.0001). The results of the Kaplan-Meier analysis and log-rank test also identified that there was a significant difference in the cumulative technical survival rate between the patients with AI level ≤ 3.5 and > 3.5 (log-rank test: χ² = 19.7, P = 0.001) (Fig 1).

CONCLUSIONS: Our results can be considered dyslipidemia in PD patients not only as a traditional risk factor for cardiovascular diseases, but also as a predictor of chronic intraperitoneal inflammation and decrease of PD technical survival. Further, well-designed clinical trials are required to establish the impact of dyslipidemia on the PD adequacy and technical survival.