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**EXTRACELLULAR OVERHYDRATION IN PERITONEAL DIALYSIS PATIENTS LINKED WITH INCREASED OXIDATIVE STRESS**Natalia Stepanova<sup>1</sup>, Lesya Korol<sup>1</sup>, Olena Burdeyina<sup>1</sup><sup>1</sup>*SI «Institute of Nephrology of the National Academy of Medical Sciences», Kyiv, Ukraine, Ukraine*

**INTRODUCTION:** Overhydration is a frequent complication in peritoneal dialysis (PD) patients which is closely associated with decrease in technique survival and increase in cardiovascular risk and mortality. The present study was undertaken to investigate the association of hydration status measured by bioimpedance analysis with oxidative stress biomarkers in PD patients.

**METHODS:** We investigated a cross-sectional sample of 85 PD patients from 2 dialysis centers in Ukraine. Among the examined patients, there were 56/85 (65.9%) men and 29/85 (34.1%) women. All patients had been undergoing continuous ambulatory PD (CAPD) for more than 3 months (median was 25.4 [14.0-49.5] months). Average age was 48.8 ± 12.5 years.

Fluid compartments [extracellular water (ECW) and overhydration index (OH)] were measured using Multifrequency bio-impedance (BCM®, Fresenius Medical Care, Germany). Overhydration was defined as OH/ECW > 15%.

Malondialdehyde concentration in serum (MDAs) and erythrocytes (MDAe) was defined as an indicator of lipid peroxidation. Such parameters as the concentration of ceruloplasmin (CP), transferrin (TR) and sulfhydryl groups (SH-groups) in the blood and total peroxidase activity in erythrocyte (TPAe) were studied as the indicators of antioxidant system. Moreover, to determine the intraperitoneal oxidative stress induction, we studied MDA and TPO in PD effluent. Analysis and all graphs were performed using MedCalc (Belgium).

**RESULTS:** Among 85 PD participants, there were 38 patients in normohydration range and 47 overhydrated people according to the OH/ECW ratio. Table 1 shows the patients' oxidative stress markers depending on changes in bioimpedance analysis data. Table 1. Oxidative stress markers of the study participants according to hydration status.

Oxidative stress parameters	Euvolemic patients (n = 38)	Overhydrated patients (n = 47)	p
measured in the blood			
TR, g/L	1.0 [0.5-5.0]	1.35 [0.5-6.4]	0.93
CP, g/L	2.27 ± 0.07	1.18 ± 0.08	0.008
SH-groups, mmol/L	1.38 ± 0,3	1.58 ± 0.35	0.05
MDAs, µmol/L	428.4 ± 155.7	577.5 ± 165.1	0.01
MDAe, µmol/L	1208.7 ± 315.8	940.5 ± 391.2	0.4
TPAe, µkat/g Hb	1139 [1100-1301]	1203.8 [938-1290]	0.85
measured in PD effluent			
MDA, µmol/L	54.5 [20.3-320]	189 [39-560]	0.001
TPA, µkat/g Hb	15.7 [5.0-31]	26 [9-42]	0.04

As presented in Table 1, there were a significant increase in serum and PD effluent MDA in overhydrated PD patients whereas the concentrations of serum CP and TPA in PD effluent were significantly lower compared with normohydrated patients. In addition, ECW had an inverse correlation with SH-groups ( $r = -0.37$ ;  $p = 0.003$ ) and MDAs ( $r = -0.48$ ;  $p = 0.004$ ).

**CONCLUSIONS:** Extracellular fluid overload promotes intraperitoneal and systemic oxidative stress which could be one of the pathway explanations of technique survival failure and cardiovascular mortality in overhydrated PD patients.