

P1591 **SERUM PARAOXONASE 1 ARYLESTERASE ACTIVITY AS AN ANTIOXIDANT MARKER IN DIALYSIS PATIENTS**

Lesya Koro<sup>1</sup>, Natalia Stepanova<sup>2</sup>, Victoria Vasylychenko<sup>1</sup>

<sup>1</sup>State Institution «Institute of Nephrology of the National Academy of Medical Sciences», Biochemistry Laboratory, Kyiv, Ukraine and <sup>2</sup>State Institution «Institute of Nephrology of the National Academy of Medical Sciences», Nephrology and Dialysis, Kyiv, Ukraine

**Background and Aims:** Patients with chronic kidney disease (CKD) have the highest risk for cardiovascular disease associated with high-density lipoprotein deficiency, chronic inflammation and the development of oxidative stress (OS).

This study aimed to investigate serum paraoxonase 1 (PON-1) arylesterase activity in patients with end-stage renal disease (ESRD) and its association with oxidative stress markers.

**Method:** We conducted a cross-sectional observational study involving 58 ESRD patients. Among them, there were 20 hemodialyses (HD) patients and 38 patients treated with peritoneal dialysis (PD).

Serum PON1 arylesterase activity was determined spectrophotometrically by the number of formed phenolic complexes using phenylacetate. Also, the concentrations of malondialdehyde, serum concentrations of ceruloplasmin, thiol groups and total peroxidase activity (TPA) in erythrocyte were determined spectrophotometrically. In addition, the blood lipid spectrum (including high-density lipoproteins) was determined in all patients.

The reference group consisted of 30 conditionally healthy individuals.

For the statistical analysis, we used Kruskal-Wallis's t-test and Spearman's rank correlation test. All statistical analyses were performed using MedCalc.

**Results:** Serum PON1 arylesterase activity was 6.57 kU/L in reference group versus 2.25 kU/L in HD patients and 4.26 kU/L in PD patients ( $p < 0.0001$ ) (Fig. 1). A direct association was found between serum PON1 arylesterase activity and ceruloplasmin concentration ( $r = 0.38$ ;  $p = 0.004$ ) and TPA ( $r = 0.32$ ;  $p = 0.02$ ) in HD patients. In addition, serum PON1 arylesterase activity was associated with high-density lipoproteins ( $r = 0.67$ ;  $p < 0.0001$ ) in PD patients (Fig. 2).

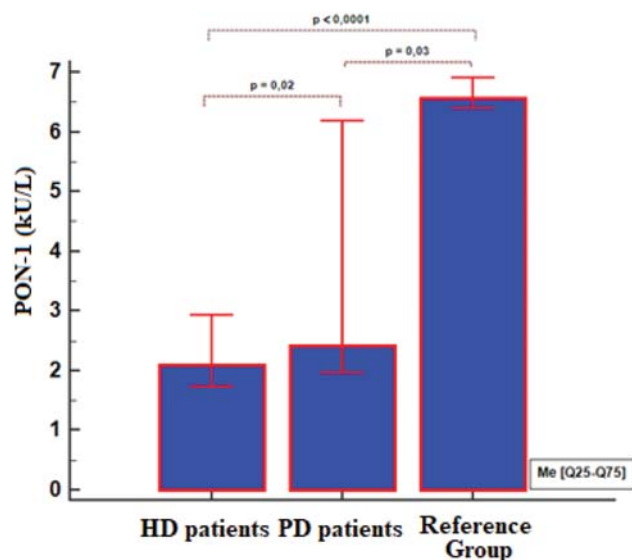


Fig. 1. Serum PON1 arylesterase activity in the dialysis and reference groups.

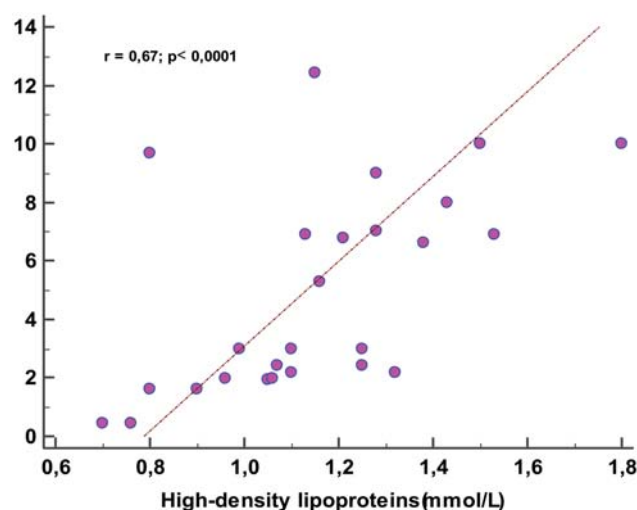


Fig. 2. Association between serum PON1 arylesterase activity and high-density lipoproteins in PD patients.

**Conclusion:** We observed a decrease in serum PON1 arylesterase activity in ESRD patients compared to the control group. The lowest level of serum PON1 arylesterase activity was determined in HD patients. Moreover, the association between serum PON1 arylesterase activity and a decrease in antioxidant blood markers was found.

Our results support the hypothesis that OS is an important mediator in the progression of kidney diseases and indicates a potential antioxidant role of serum PON1 arylesterase activity in ESRD patients. We suggest using serum PON1 arylesterase activity as an antioxidant marker in dialysis patients.