

Authors: Mykola Kolesnyk, Natalia Stepanova, Lesya Korol, Mykola Kulizkyi, Olena Ablogina, Lyudmila Migal

Hospital: State Institution «Institute of Nephrology of the National Academy of Medical Sciences», Kyiv, Ukraine

INTRODUCTION & AIMS

Oxidative stress is resulted by the imbalance in production of free radicals and antioxidant activity. It is wide-spread opinion that in dialysis patients oxidative stress is associated with chronic inflammation. We identified that only few cross sectional studies described the markers of lipid peroxidation and antioxidant status of different dialysis modalities.

The objective of our investigation was to compare the oxidative stress degree in three groups of patients using different dialysis techniques: a) continuous ambulatory peritoneal dialysis (CAPD), b) hemodialysis (HD) three times / week, and c) haemodiafiltration (HDF) three times / week.

METHODS

We examined several serum markers of oxidative stress as follows: malondialdehyde (MDA), ceruloplasmin (CP) and transferrin (TF) in 47 dialysis patients (18 CAPD patients, 15 HD patients, and 14 HDF patients), aged 31 to 70 years (mean 49.3 ± 12.7 years).

There were two diabetics in each group. All patients were examined before a dialysis session. Patients received dialysis treatment more than 12 months.

The statistical analysis was performed using MedCalc.

RESULTS

Oxidative stress was detected in each of the three groups. The MDA level was the highest in HD patients in compared with HDF patients ($P=0.88$) and patients of CAPD group ($P=0.03$).

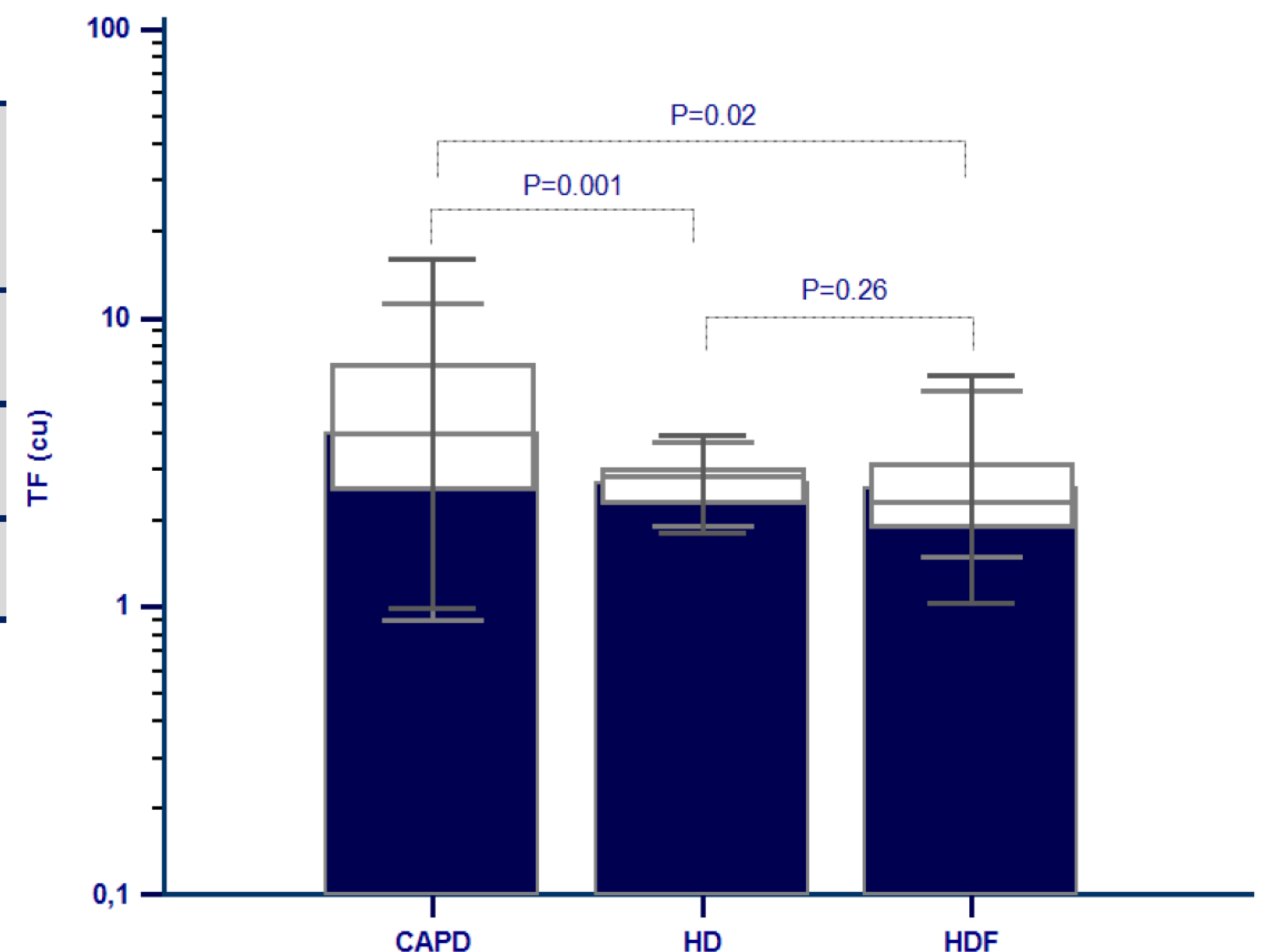
Antioxidant proteins CP and TF did not differ significantly between HD and HDF groups ($P=0.9$ and $P=0.5$, respectively). But, the patients of CAPD group showed the highest level of TF ($P=0.001$ in compared with HD patients).

The CP concentration was significantly higher in patients on HDF compared with CAPD ($P<0.001$).

Mean Values of Oxidative Stress Markers in CKD 5D Patients

Markers of oxidative stress	HD (M±SD)	HDF (M±SD)	CAPD (M±SD)
MDA (mcmol/l)	474.5±131	467.6±131	381.4±104.3*
CP (g/l)	15.8±4.4	17.4±5.1	8.4±2.1*
TF (cu)	3.0±1.2	2.9±1.6	5.23±1.7*

* $P<0.05$ for CAPD versus HD



Blood Transferrin Levels in CKD 5D Patients

CONCLUSIONS

In CKD 5D patients we identified the different type of lipid peroxidation and antioxidant defenses. However, the oxidative stress is a common event in end stage renal diseases, regardless of the kind of dialysis technique.

REFERENCES:

1. Estimation of Oxidative Stress Markers in Chronic Kidney Disease. Kuchta A., Pacanis A., Kortas-Stempak B., Cwiklińska A., Ziętkiewicz M., Renke M., Rutkowski B. *Kidney Blood Press.* 2011; vol. 34: 12–19.
2. A Study of Bio-Markers of Oxidative Stress and Inflammation in Chronic Kidney Disease. Meenakshi Sreeram, Suryakar A.N., Kulhalli P.M. *IOSR Journal of Dental and Medical Sciences.* 2013; vol. 11: 06-10.
3. Blood Enzymes and Oxidative Stress in Chronic Kidney Disease: A Cross Sectional Study. Kamisha L. Johnson-Davis, Colby Fernelius, Nathan B. Eliason, Andrew Wilson, Srinivasan Beddhu, William L. Roberts. *Ann Clin Lab Sci.* 2011; vol. 41, no. 4: 331-339.