Aim: Increased oxidative stress, that occurs with excessive free radical production or low antioxidant levels, is common in patients who undergo peritoneal dialysis (PD) and this level of oxidative stress can cause alterations in erythrocyte deformability and aggregation. The aim of this study was to evaluate RBC susceptibility to oxidative stress in PD patients.

Methods: Blood was collected from PD patients and healthy donors. Enzyme activities of Glutathione peroxidase (GPx), Superoxide dismutase (SOD) and Catalase (CAT) were studied in erythrocytes; lipid peroxidation was studied by measuring the amount of MDA in both erythrocytes and plasma samples. All assays were evaluated spectrophotometrically. Erythrocyte deformability and aggregation were measured by Laser diffraction ektacytometry (LORRCA).

Results: CAT and GPx activities in erythrocytes were decreased in PD patients (p=0.02 and p=0.0008, respectively) whereas SOD activity was increased (p=0.013). MDA was not significantly different in erythrocytes however it was significantly higher in plasma (p=0.0016), which also shows correlations with t-half (r=-0.66, p=0.0001) and Amp (r=-0.56, p=0.002). Amp in dextran and AI (%) in both plasma and dextran were significantly different in patients and controls (p<0.05). Deformability did not show any difference between groups.

Conclusion: Erythrocytes in PD patients show more tendency to aggregation and this could be influenced by lipid peroxidation activity in patient plasma.