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Inflammation and Oxidative Stress: Correlation with Protein Energy Wasting in Pre-Dialysis Chronic Kidney Disease Patients (Stage 2 To 5).

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Objectives : To study the association of inflammatory and oxidative stress markers with protein energy wasting (PEW) among pre-dialysis chronic kidney disease (CKD) patients.
Methods : Markers of inflammation and oxidative stress were analyzed in a cohort of pre-dialysis CKD patients (n=280) at stages 2 to 5 (56 patients from each CKD stage and 56 healthy controls). Anthropometric, clinical, and biochemical parameters, subjective global assessment, and dietary recall were taken including PEW components. Cytokines (C-reactive protein, TNF-α, IL-6, IL-10), oxidative stress markers-Malondialdehyde (MDA), Glutathione reductase (GR) and Superoxide dismutase (SOD) were analyzed by the ELISA. Parametric variables were analyzed by T- independent test.
Results : The PEW was present in 86 (38.83%) of CKD patients. The level of anti-inflammatory cytokine, IL-10 in patient with and without PEW was (6.72 ± 1.58 vs 19.39±17.42 pg/ml, $p<0.01$); The inflammatory cytokines IL-6 was (81.95 ± 32.33 vs 41.37 ± 17.80 pg/ml, $p<0.01$), TNF-α was (84.94 ± 21.55 vs 55.53 ± 14.18 pg/ml, $p<0.01$) and CRP was (8.67 ± 2.39 vs 4.87 ± 3.27mg/dl, $p<0.01$). The MDA level in patient with and without PEW was (53.74 ± 6.27 vs 43.46 ± 6.28 ng/ml, $p<0.01$), GR level was (65.04 ± 11.83 vs 87.53 ± 15.45 pg/ml, $p<0.01$) and SOD was (1.26 ± 1.78 vs 12.06 ± 14.18 ng/ml, $p<0.01$).
Conclusions : The level of IL-6, TNF-α and CRP was significantly higher in PEW group and IL-10 was lower in PEW group. The level of MDA was higher and SOD and GR was lower in PEW group.