

THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY STATUS AND SERUM IRISIN AND MYOSTATIN LEVELS IN PATIENTS WITH NON-DIALYSIS CHRONIC KIDNEY DISEASE

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Background: Sarcopenia, a syndrome characterised by progressive and generalised loss of skeletal muscle mass and strength with a risk of physical disability, poor quality of life and death, is common in patients with chronic kidney disease (CKD). The Short Physical Performance Battery (SPPB) is one of accepted tools to evaluate sarcopenia. Myostatin, a negative regulator and irisin, a positive regulator of muscle growth, were used as biomarkers to explain the pathogenesis of sarcopenia. The aim of this study is to evaluate sarcopenia in patients diagnosed with CKD via SPPB and serum myostatin and irisin levels, and the relationship between these parameters.

Methods: A total 136 consecutive, adult, mobil patients followed with non-dialysis CKD stage 3, 4 and 5 were included. SPPB was performed by the same physician. Serum samples for irisin and myostatin measurements were obtained just before the physical assessment.

Results: There was a positive correlation between SPPB-total and glomerular filtration rate (GFR) ($r=0.396$; $p<0.001$), and a negative correlation between age ($r= -0.362$; $p<0.001$). The median SPPB-total score was significantly low in CKD stage-5 group compared with stage 3 and 4 groups (10 vs. 10 vs. 6; $p<0.001$). Serum irisin level was correlated positively with GFR and SPPB-total ($r=0.641$; $p<0.001$, $r=0.379$; $p<0.001$, respectively). Serum myostatin level showed a negative correlation with GFR and SPPB ($r= -0.632$; $p<0.001$, $r= -0.358$; $p<0.001$, respectively).

Serum irisin and myostatin levels, GFR and age were identified as independent predictors for SPPB-total score. The 1-unit increase in serum irisin level increased the SPPB-total score by 1.33 fold, while the 1-unit increase in myostatin level decreased the SPPB-total score by 0.65 fold. 1 ml/min/1.73 m² increase in GFR increased SPPB-total score by 0.51 fold. 1-year increase in age decreased SPPB-total score by 0.59 fold. (Table-1)

Conclusion: The results obtained in our study did show that SPPB-score, which is a composite measure of physical performance, was negatively correlated with CKD stage. The decrease in serum irisin levels and the increase in serum myostatin levels accompanied by GFR fall were independent predictors for SPPB score. These findings suggest that combining serum irisin and myostatin with physical assessment tools can be used to monitor sarcopenia in CKD patients.