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KIDNEY FUNCTION AND BIOCHEMICAL PROFILE IN PATIENTS WITH POST-COVID SYNDROME

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Relevance. After the COVID-19 pandemic, post-COVID syndrome has emerged as a significant clinical concern. Although the acute phase of infection is often mild in young adults, increasing evidence suggests potential long-term effects on various organ systems, including the kidneys. Mild renal impairment may go unnoticed in young adults without comorbidities. Therefore, evaluating kidney function using serum creatinine and estimated glomerular filtration rate (eGFR), alongside biochemical parameters, is essential for early detection of renal dysfunction. At the same time, evidence on renal long COVID in young, initially healthy individuals after mild infection remains limited, which justifies further research in this group.

Aim: to assess kidney function in patients with post-COVID syndrome based on serum creatinine levels and eGFR, as well as to describe the characteristics of the blood biochemical profile in ambulatory patients aged 18–44 years with post-COVID syndrome after a mild course of coronavirus infection without concomitant pathology.

Materials and methods. A cross-sectional study was conducted among patients aged 18–44 years with post-COVID syndrome after a mild course of COVID-19. Kidney function was assessed using serum creatinine levels and eGFR calculated using the CKD-EPI equation. An extended biochemical blood panel was analyzed, including urea, electrolytes (sodium, potassium), glucose, and lipid profile (LDL, HDL). Patients were planned to be divided into subgroups based on eGFR values (normal ≥ 60 mL/min/1,73 m² and reduced < 60 mL/min/1,73 m²). Statistical analysis was performed using Python. Descriptive statistics (means, standard deviations, medians, interquartile ranges, proportions) were calculated. Group comparisons, where applicable, were carried out using appropriate parametric or non-parametric tests. Correlation analysis (Spearman's rank correlation) was applied to assess associations between renal function parameters and clinical variables such as gender, time elapsed since COVID-19 infection, smoking status, and alcohol consumption. Statistical significance was set at $p < 0,05$.

Results and their discussion. A total of 172 patients were included in the analysis. The mean eGFR was $121,15 \pm 12,95$ mL/min/1,73 m², indicating that overall renal function was within normal limits in the studied population. No patients were found to have reduced eGFR (< 60 mL/min/1,73 m²), suggesting preserved kidney function across the cohort. The biochemical profile demonstrated mean values within physiological ranges. Correlation analysis revealed weak to moderate associations between eGFR and metabolic parameters. A negative correlation was observed between eGFR and glucose ($r = -0,36$), LDL ($r = -0,35$), and urea ($r = -0,32$), suggesting that higher metabolic values may be associated with slightly lower renal function even within normal ranges. A weak positive correlation was found between eGFR and HDL ($r = 0,20$), indicating a potentially protective relationship. Electrolytes, including potassium and sodium, showed minimal or negligible correlation with eGFR. Due to the absence of patients with reduced eGFR, subgroup comparison by renal function category was not feasible.

Conclusions. The absence of reduced eGFR values in this cohort suggests that a mild course of COVID-19 does not lead to marked kidney dysfunction in young adults. Variability of eGFR within the normal range may reflect early functional changes, underscoring the importance of further longitudinal studies to assess the long-term effects of COVID-19 on kidney function in initially healthy patients.