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The role of sST2 and NTproBNP biomarkers in predicting the adverse course of COVID-19 and arterial hypertension

Pokrovska Nataliia K.[1], Samchuk Oleh O.[1], Kapustynska Oksana S.[1], Sklyarova Olena E.[2], Denysenko Nataliia V.[3], Kobylinska Lesya I.[3], Sklyarov Eugen Y.[1] Vari Sandor G[4]

[1]Department of Therapy № 1 and Medical Diagnostics FPGE, [2]Department of Family Medicine FPGE, [3]Department of Biochemistry, Danylo Halytsky Lviv National Medical University, Ukraine
[4]International Research and Innovation in Medicine Program, Cedars-Sinai Medical Center, Los-Angeles, CA, USA.

Corresponding author: Pokrovska Nataliia K., natapokrovska@gmail.com

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Introduction: COVID-19 may cause or worsen cardiac dysfunction and patients with pre-existing cardiovascular disease, including heart failure (HF), have an increased risk of severe and fatal outcomes of COVID-19.
The study aimed to establish the role of soluble suppression of tumorigenesis-2 protein (sST2) and natriuretic peptide test (NT-proBNP) in predicting the severe course and in-hospital mortality of patients with COVID-19 and arterial hypertension (AH).
Methods: 109 inpatients with COVID-19 and AH who were treated at the "Lviv Emergency Hospital" were examined. The determination of sST2 and NTproBNP in blood serum were done using the ELISA method. The clinical endpoint was assessed during the hospitalization period (death, hospitalization in ICU, prolonged hospitalization). The risk of the final event development was calculated for the patients who reached the threshold sST2 concentrations, and, separately, based on the diagnostic values of the NT-proBNP indicator.
Results: The cut-off values of sST2 recommended for the diagnosis of HF in our study reached 25% of patients. The risk of final clinical points development in these patients was OR=9.0; 95% CI: 1.61; 50.3; p=0.0123. The level of NT-proBNP, which meets the criteria for the diagnosis of HF, was constant in only 9.0% of individuals (p=0.0461) and the risk of clinical events developing was equal to OR=4.69; 95% CI: 1.49; 14.8; p=0.0083.
Discussion: High concentrations of sST2 and NTproBNP were associated with a severe course and a higher risk of mortality in patients with COVID-19 and AH. The additional determination of sST2 significantly complements the capabilities of NT-proBNP in risk stratification and determination of prognosis.
Conclusion: Thus, sST2 and NTproBNP are highly informative predictors of HF development in hospitalized patients. Stratification of patients based on sST2 values, in addition to NT-proBNP parameters, may provide further prognostic value compared to NT-proBNP levels in patients with COVID-19 and AH.

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