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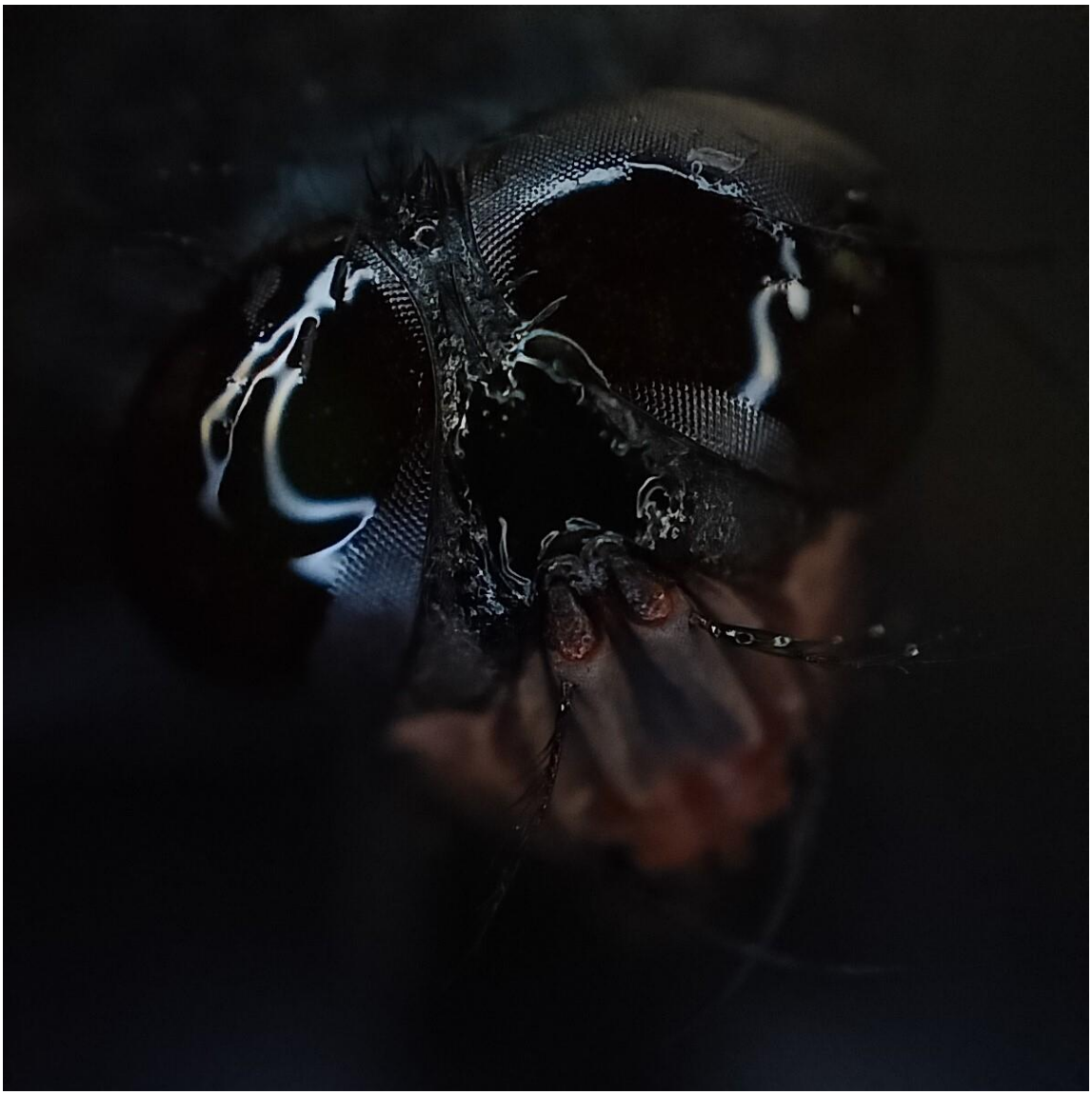
Cardiovascular Diseases (CVD)



Hermetia illucens
Yevhenii Kucheriavyi
Palladin Institute of Biochemistry NAS of Ukraine, Kyiv, Ukraine

sST2, myeloperoxidase and iNOS as a marker of myocardial damage and inflammation in patients with arterial hypertension and COVID-19

Fedevych Y.I.[1], Denysenko N.V.[2], Fomenko U.O.[2], Sklyarova H.E.[3], Sklyarov E.Y.[3], Kobylinska L.I.[2]

[1] Communal Noncommercial Enterprise of Lviv Regional Council "Lviv regional clinical diagnostic center", Lviv, Ukraine
[2] Department of Biochemistry, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine
[2] Department of Therapy 1, Medical Diagnostics and Hematology, Transfusiology FPGE, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

Presenting Author: Uliana Fomenko, uliana.fomenko2003@gmail.com, student
Corresponding author: Lesya Kobylinska, lesyaivanivna.biochemistry@gmail.com

Keywords: COVID-19, hypertension, biomarkers, inflammation, cardiovascular diseases
Introduction: The prevalence of COVID-19 and its polymorphic clinical manifestations are attributed to a systemic inflammatory response, which also plays a key role in the development of arterial hypertension (AH). The prognosis and effectiveness of treatment in patients with AH and COVID-19 should be assessed based on the levels of inflammatory biomarkers – activity of myeloperoxidase and inducible NO-synthase (iNOS), level of factor soluble suppression of tumorigenicity 2 (sST2).
Methods: Two groups of patients were examined: group 1 – 36 patients with AH and hypertensive crisis. Group 2 – 35 patients with AH and polysegmental pneumonia on the background of COVID-19. The control group – 16 practically healthy individuals. All patients underwent anthropometry, determination of biochemical blood tests, echocardiography, level of sST2, and activity of iNOS and MPO using ELISA in blood serum and lymphocytes.
Results: A 2.4-fold increase in sST2 content in blood serum was noted in AH and 2.9-fold in the background of COVID-19. The level of myeloperoxidase in blood serum increased 2.5 times in hypertension and 3.4 times in coronavirus disease. In lymphocytes, iNOS activity increased 3.25 times in hypertension and 4.3 times in COVID-19. sST2 level has a significant correlation with the size of the left atrium, left ventricle, and ejection fraction in patients with AH. A positive correlation with age was noted in the group of patients with AH and COVID-19.
Discussion: In patients with AH and with COVID-19, a significant increase of sST2, myeloperoxidase, and iNOS was observed compared to practically healthy individuals. A significant elevation in myeloperoxidase levels has been noted in patients with AH without COVID-19, indicating the utility of its use as a highly sensitive marker for low-intensity inflammation than C-reactive protein, particularly in arterial hypertension.
Conclusions: Measurement of the level of sST2, activity of iNOS, and MPO 3 biomarkers allows for evaluation of intensity of systemic inflammation, left ventricular hypertrophy and serves as an addictive tool in evaluating cardiac and endothelial dysfunction, indicating different directions of its development.

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