

The high levels of truncated forms of Osteopontin and Galcetin-9 in the plasma are associated with the severity markers Covid-19 pneumonia and decline after tocilizumab therapy.

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Summary

Plasma levels of full-length galectin-9 (FL-Gal-9) and osteopontin (FL-OPN) as well as their truncated forms (Tr-Gal-9, Ud-OPN, respectively), measured in 94 plasma samples obtained from 23 COVID-19-infected patients with mild clinical symptoms (CV), 25 COVID-19 patients associated with pneumonia (CP), and 14 patients with bacterial infection (ID). The four proteins were significantly elevated in the CP group when compared with healthy individuals. ROC analysis between the CV and CP groups showed that C-reactive protein had the highest ability to differentiate, followed by Tr-Gal-9 and ferritin. Spearman's correlation analysis showed that Tr-Gal-9 and Ud-OPN but not FL-Gal-9 and FL-OPN, had a significant association with laboratory markers for lung function, inflammation, coagulopathy, and kidney function in CP patients. CP patients treated with tocilizumab had reduced levels of FL-Gal-9, Tr-Gal-9, and Ud-OPN. It was suggested that OPN is cleaved by interleukin-6-dependent proteases. These findings suggest that the cleaved forms of OPN and galectin-9 can be used to monitor the severity of pathological inflammation and the therapeutic effects of tocilizumab in CP patients.

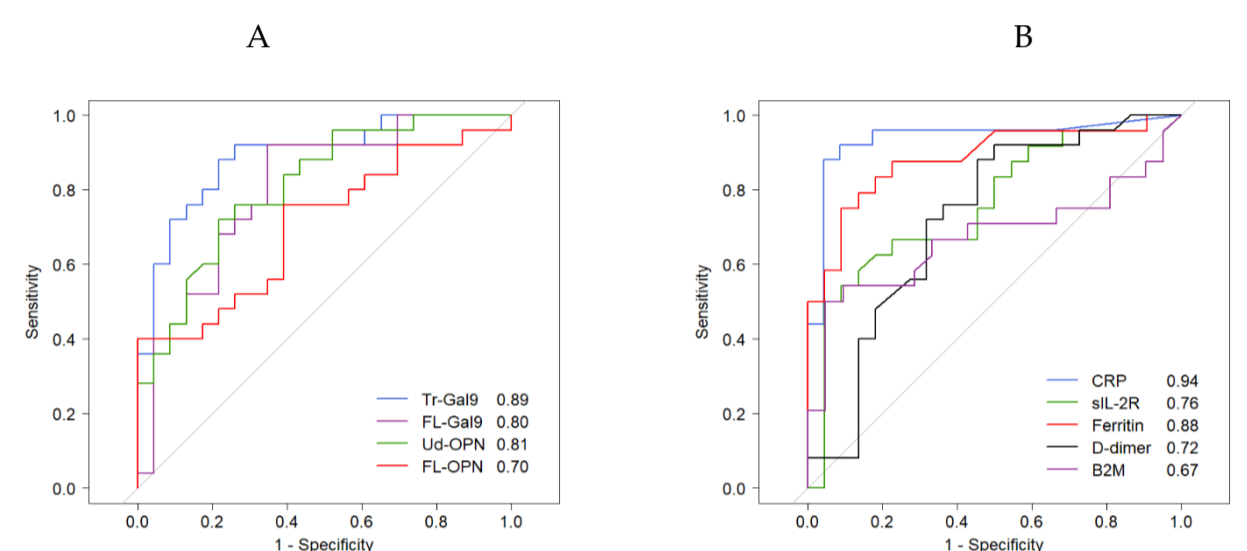


Figure 5. ROC analysis of inflammatory, coagulation, kidney and respiratory indicators between the CV and CP groups. Gal-9 and OPN (A), and inflammatory markers (B).

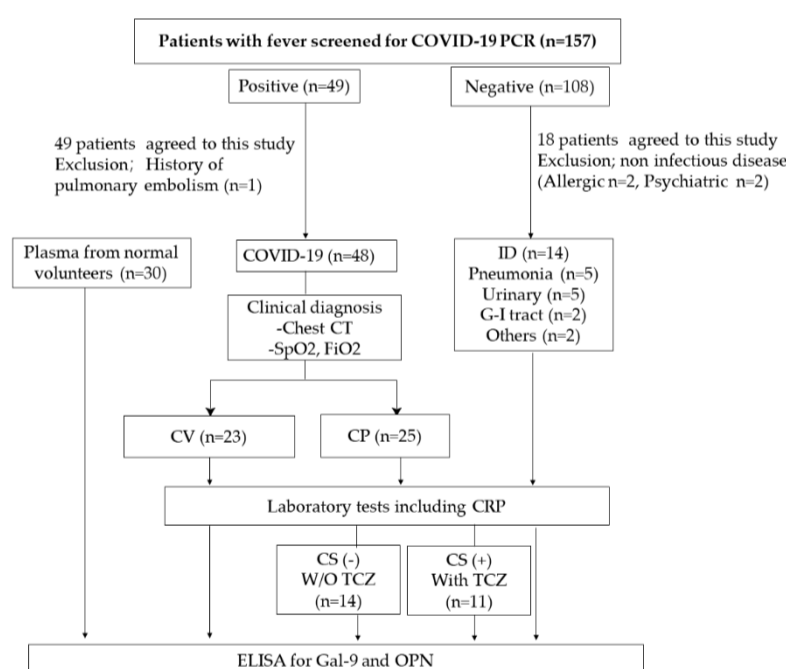


Figure 1. Patients over the age of 20 years participated in this study. COVID-19-infected patients with mild clinical symptoms (CV), COVID-19 patients associated with pneumonia (CP), and patients with bacterial infection (ID) were studied.

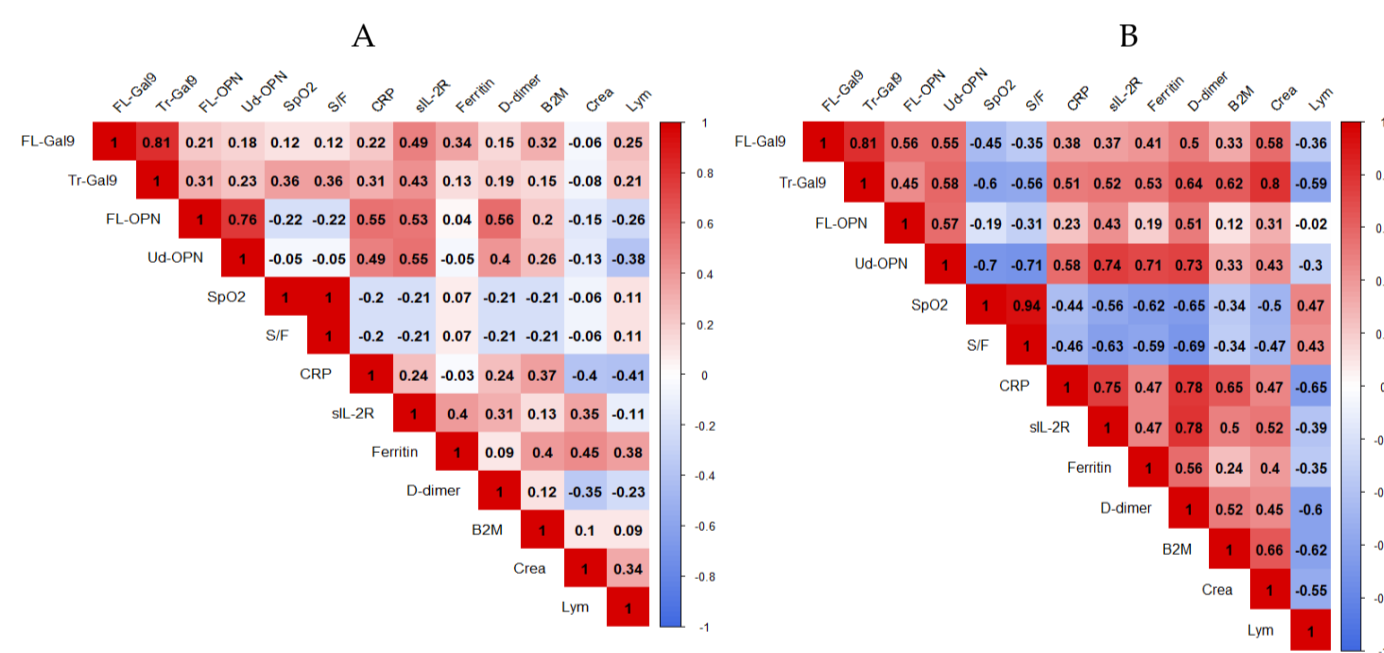


Figure 6. Associations of studied indicators in the CV (A) and CP (B) groups. The correlation was measured by the Spearman *t*-test. The correlation R-value is written in each well and displayed as colors ranging from blue to red as shown in the legend key. *p*-value is written significant as *; *p* < 0.05.

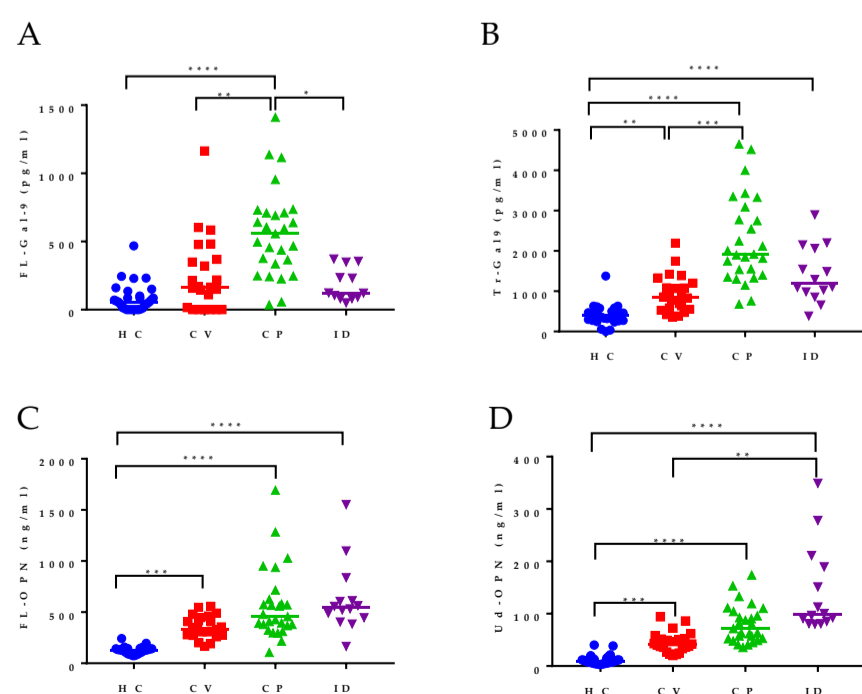


Figure 2. Levels of FL-Gal-9 (A), Tr-Gal-9 (B), FL-OPN (C), and Ud-OPN (D) in CV, CP, ID, and HC. ****; *p* < 0.0001, ***, *p* < 0.001, **, *p* < 0.01, *, *p* < 0.05.

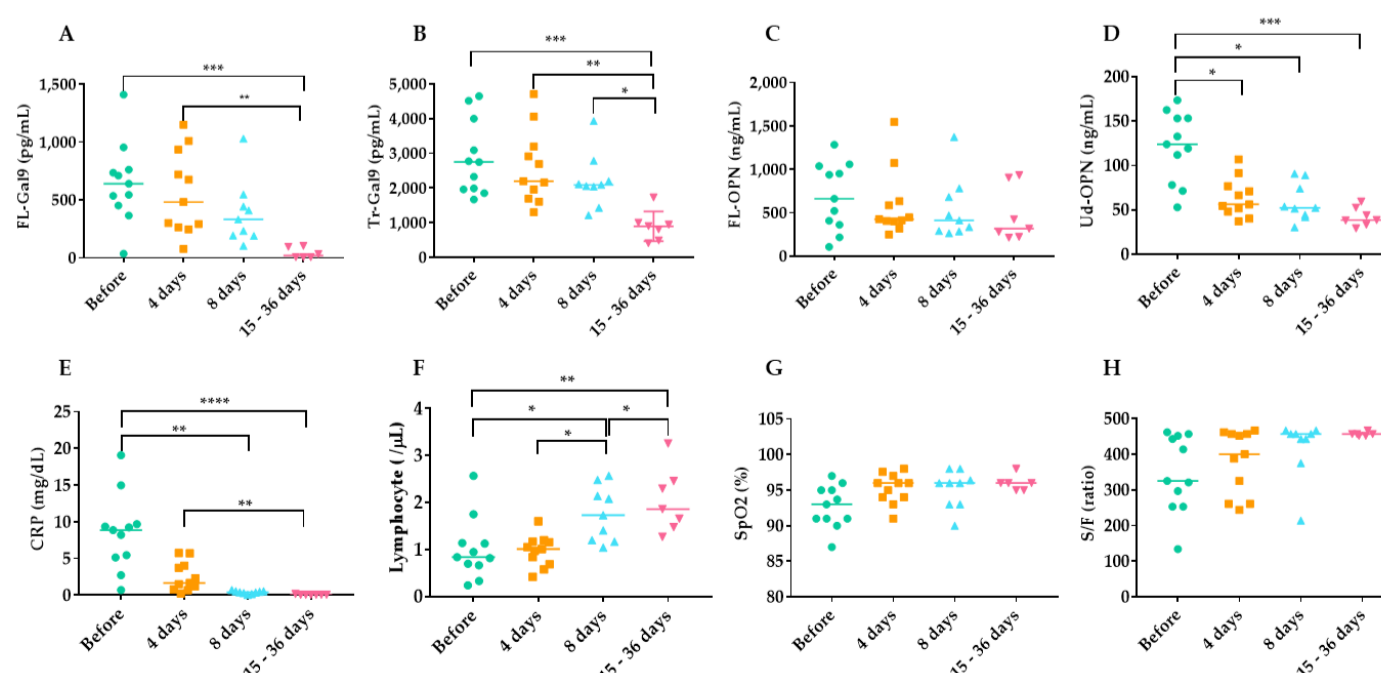


Figure 7. Effects of TCZ therapy on markers. FL-Gal-9 (A), Tr-Gal-9 (B), FL-OPN (C), Ud-OPN (D), CRP (E), Lymphocyte (F), SpO2 (G), S/F ratio (H). TCZ; tocilizumab, ****; *p* < 0.0001, ***, *p* < 0.001, **, *p* < 0.01, *, *p* < 0.05.

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