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Patterns of Urinary Biomarkers of Immunologic Activation and Sepsis in Patients with COVID-19

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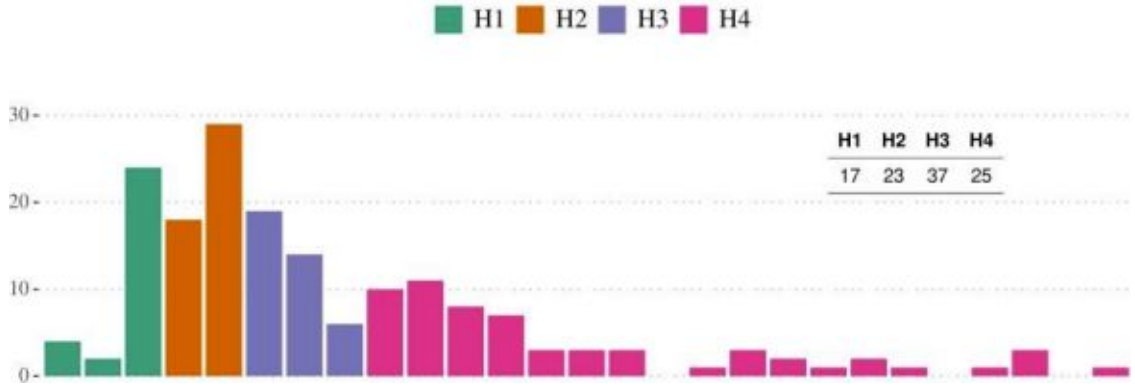
Background

- In the past, some studies have used urine to assess the state of the immune system.
- Here, we hypothesized that urinary biomarkers can be used to assess immune activation and the effect of antiviral treatment in patients infected with COVID-19.

Methodology

- This was a cross-sectional study involving 68 patients.
- **Collection of Samples**

  Urine samples were collected within 48 hours of hospital admission (H1), followed by 96 hours (H2), seven days (H3), and up to 25 days (H4) from admission.

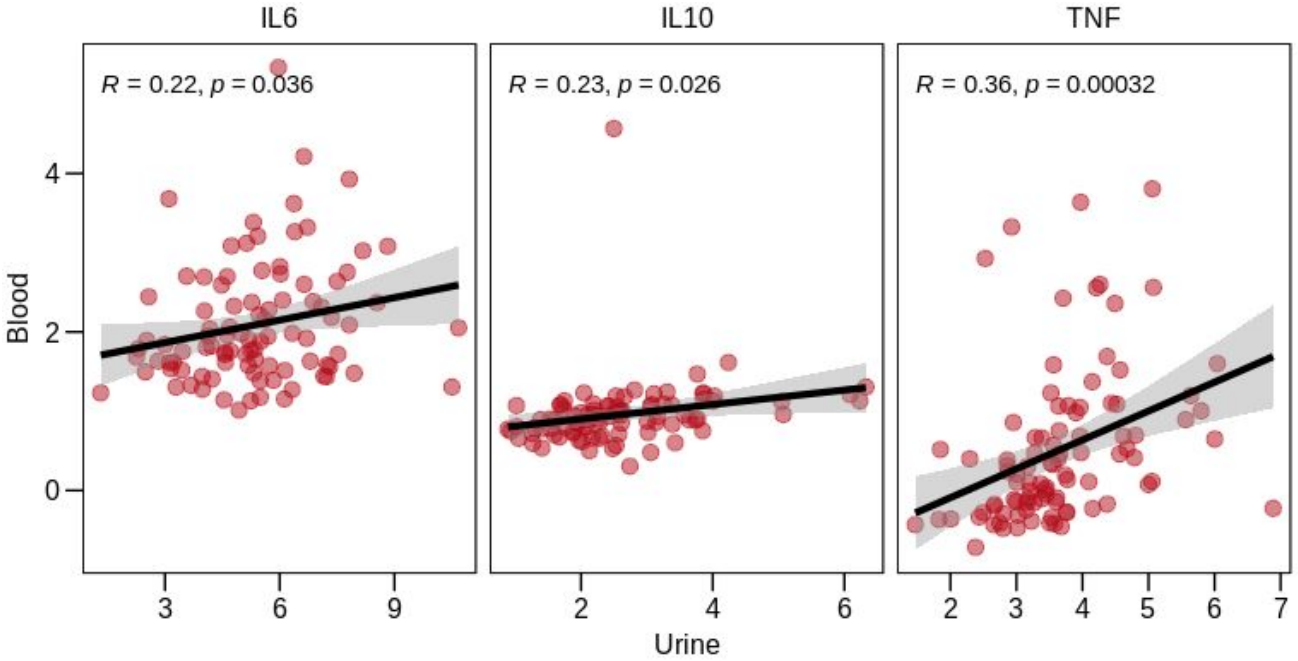


Methodology

- Overall immune activation was assessed by serum levels of Ferritin, IL-6 and procalcitonin.
- Viral response was gauged with serum levels of spike proteins and α-spike proteins IgM and IgG.
- A targeted panel of immunological biomarkers in urine was tested using the O-link technique.

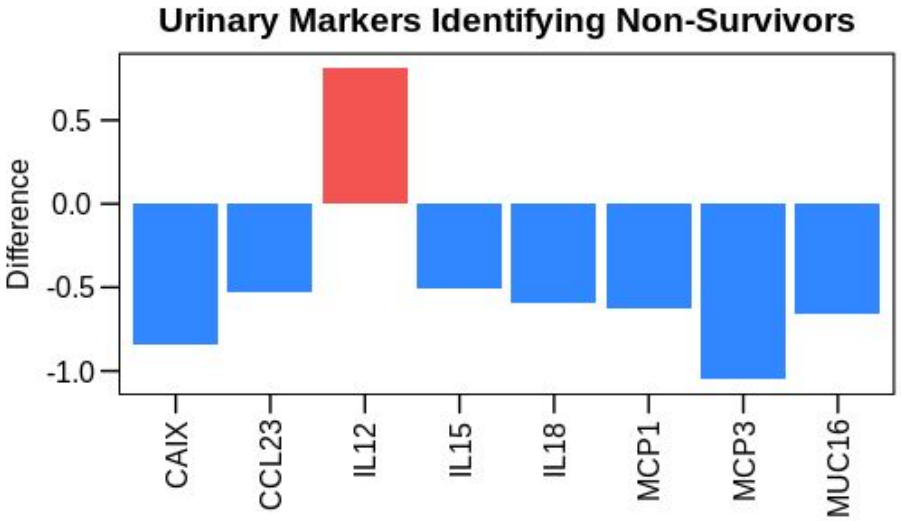
Results

Several biomarkers were correlated highly between urine and blood.



Results

Severity of the illness correlated with urine markers as higher urinary levels of IL12 and lower CAIX, CCL23, IL12 and others identified non-survivors



Results

- APACHE II scores showed strong correlation with several urinary markers including TNFRS21, PGF, CAIX, and EGF
- The levels of LAG3 and IL2 in urine at admission predicted death
- Of the treatments considered, Remdesivir was found to have the most profound impact.

Conclusions

- Urinary biomarkers correlated with clinical status and can be utilized for the assessment of the effect of various treatments on immune system performance.
- Urinary biomarkers also allow for correlation with clinical status and probability of demise.

THANK YOU

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