



COMPARATIVE EFFECTS OF TOCILIZUMAB AND CYTOSORB® ON BLOOD CYTOKINE LEVELS IN PATIENTS WITH SARS-CoV-2 PNEUMONIA

Berlot G¹, Tomasini A¹, Di Maso V², Bianco F² and Gerini U²

1 Department of Anesthesia and Intensive Care Medicine, Cattinara University Hospital, Azienda Sanitaria Universitaria Giuliano-Isontina, Trieste, Friuli-Venezia Giulia, Italy

2 Department of Nephrology, Cattinara University Hospital, Azienda Sanitaria Universitaria Giuliano-Isontina, Trieste, Friuli-Venezia Giulia, Italy

Background

SARS-CoV-2 is responsible of respiratory failure and also causes a massive release of inflammatory mediators such as IL-6, IL-1, CRP etc. This hyperinflammatory condition, often indicated as Cytokine Release Syndrome (CRS), could lead to life-threatening events. The clinical course resembles septic shock and the elevated values of inflammatory mediators are associated with a higher viral load and reduced survival. The use of techniques aiming to contrast the surge of inflammatory mediators has been advocated in the treatment of this condition.

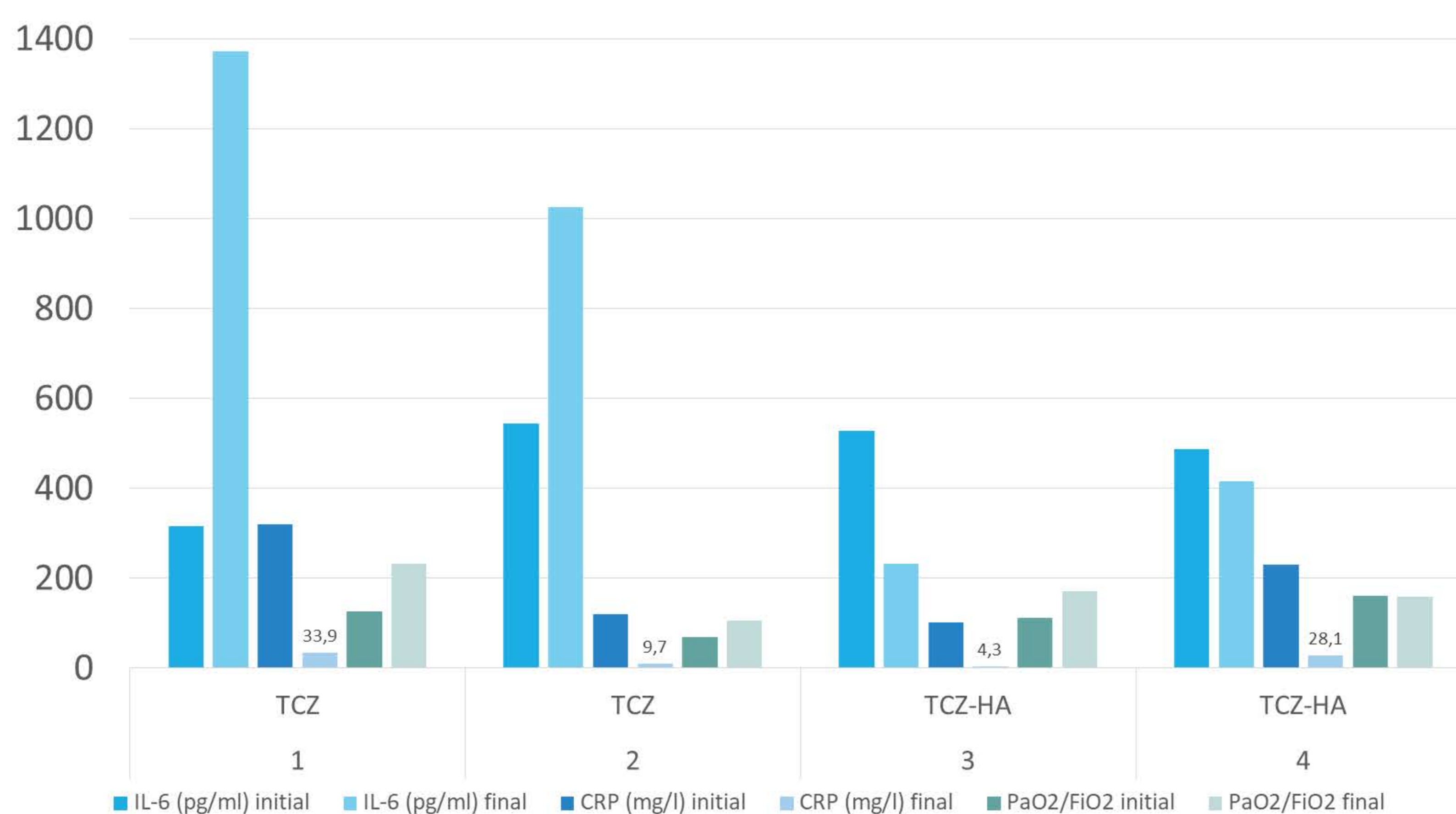
Methods

Four patients were retrospectively admitted in Intensive Care Unit with respiratory failure caused by SARS-CoV-2 infection. Two patients were treated with Tocilizumab (TCZ) alone, the others received TCZ in association with hemoadsorption (HA) treatment. The HA procedure was performed with CytoSorb responsible of removing hydrophobic molecules with a molecular weight of up to approximately 60 kDa including cytokines and other inflammatory mediators involved in CRS. Each procedure lasts 24 hours.

Blood values of IL-6, C-reactive protein (CRP) and other biochemical variables were measured in two patients who received Tocilizumab (TCZ) alone and in other two in whom it was associated with hemoadsorption (TCZ-HA). All variables were measured before, during and after the treatment.

The aim of the study is to assess the variations of IL-6 in patients with SARS-CoV-2 infection treated with TCZ alone or in association with hemoadsorption (HA).

Time course of IL-6, CRP, and minimum daily PaO₂/FiO₂



Results

All patients full-filled the criteria of severe SARS-CoV-2 infection. In all patients the administration of TCZ was followed by an increasing in IL-6 values. Its values remained elevated in patients given TCZ but sharply decreased in the following days in those treated also with HA. The percentage variations of IL-6 from the baseline between the two groups was +344% and +89% in the two patients treated with TCZ alone and -56% and -15% in TCZ-HA group. Both TCZ and TCZ-HA were well tolerated.

Conclusion

The increase of the IL-6 can be ascribed to its displacement from cellular and soluble receptors, whereas its decrease is likely due to the scavenging effect exerted by the HA. Although the association TCZ-HA could be valuable in the treatment of the Cytokine Release Storm (CRS) associated with SARS-CoV-2, the HA could be more effective as it neutralizes a wider panel of inflammatory mediators. More experience is needed to identify the best candidate for TCZ or TCZ-HA.