Hemoperfusion with CytoSorb as Adjuvant Therapy in Critically Ill Patients with SARS-CoV2 Pneumonia

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Background

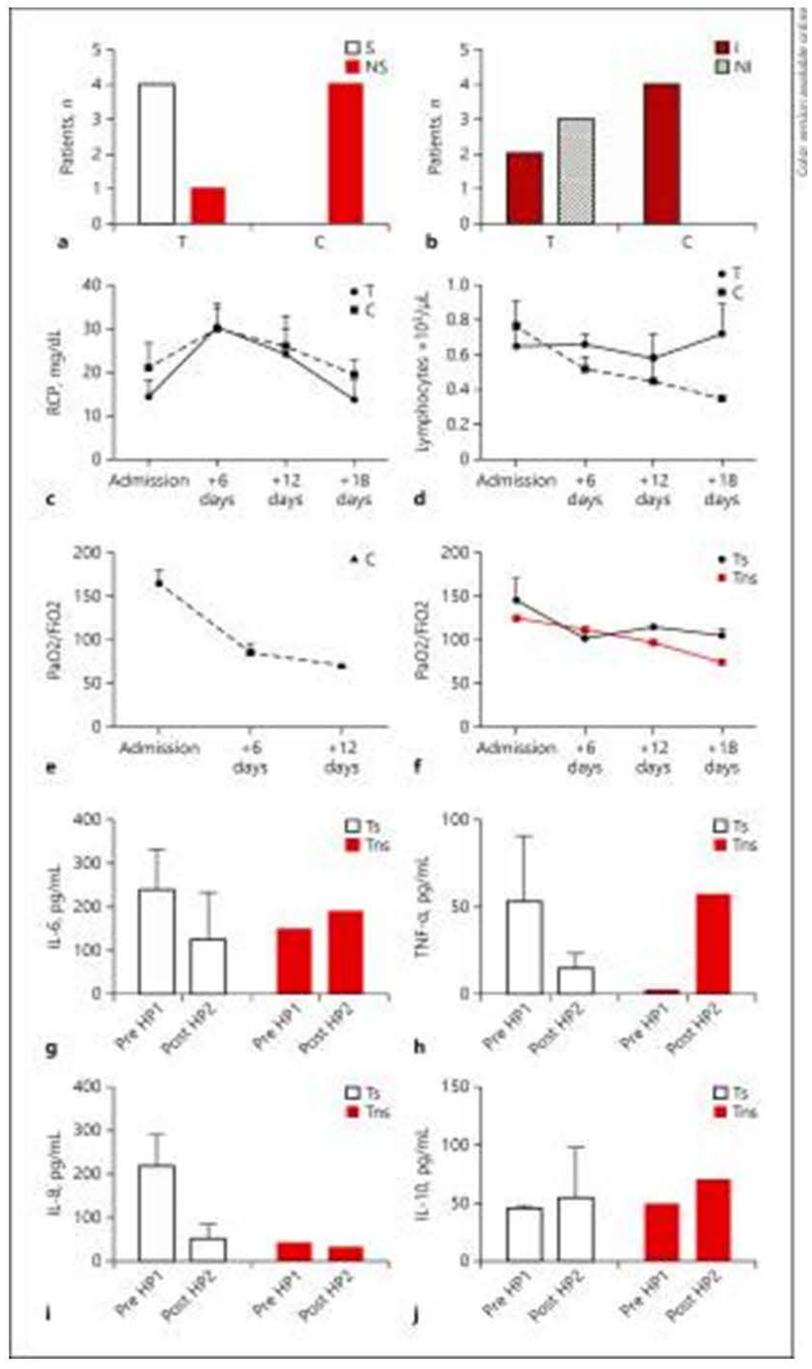
Several pro- and anti-inflammatory cytokines involved in COVID-19 and it is reasonable to speculate that their removal from blood might limit organ damage. Hemoperfusion with CytoSorb is a technique developed to adsorb molecules in the middle molecular weight range (up to 55 kDa). Studies in vitro and in vivo have shown that HP is highly effective in clearing blood from a number of cytokines.

Methods

We report a case series of 9 consecutive COVID-patients admitted to our COVID Intensive Care Unit (ICU). Five of them were treated with HP using CytoSorb (T), due to the heavy emergency overload it was impossible to deliver blood purification in the other 4 patients (C), who were also considered as potential candidates by the attending medical team. All patients had pneumonia and respiratory failure requiring continuous positive airway pressure. Different antibacterial prophylaxes, antiviral, and anti-inflammatory therapies including steroids were delivered.

Results

Our results show a better clinical course of T compared to control patients (C), in fact all T except 1 survived, and only 2 of them were intubated, while all C required intubation and died.
CRP decreased in both groups, but to a greater extent after HP. Lymphocytopenia worsened in control patient but not in treated patient after HP. Procalcitonin increased in 2 of the not treated patients. In all survived patients (n = 4) HP reduced pro-inflammatory cytokines, as IL-6, TNF-α, and IL-8. Notably, a striking effect was observed on IL-6 levels that at the end of the second session were decreased by a 40% than before the first treatment. Serum levels of IL-8 and TNF-α were lowered within normal range. In all patients the treatment was safe and there were no complications.



Conclusion

Our study suggests a potential efficacy of HP in an early phase of viral infection not only for improving survival in the treated patients but also by the remodeling treatment-associated cytokine levels.