

Adjunctive therapies for early withdrawal from extracorporeal membrane oxygenation

To the Editor,

The World Health Organization interim guidelines recommend extracorporeal membrane oxygenation (ECMO) for severe acute respiratory distress syndrome (ARDS) associated with coronavirus disease 2019 (COVID-19). Haiduc et al.¹ reported a detailed perspective of ECMO use in COVID-19-associated ARDS.

ECMO systems are clearly a finite resource, and there would be limitations in providing ECMO in the case of an outbreak of COVID-19.² Indeed, there have been several media reports of patients with refractory hypoxemia being unable to receive ECMO because of a shortage of equipment. Such problems tend to be emphasized as social issues, but it should be noted that ECMO is not an active treatment but supportive therapy against ARDS.

To reduce the immunological disadvantages involved in initiation of an extracorporeal circuit³ and increase the survival rate of these patients, early withdrawal from ECMO must be achieved with preparation of additional therapy while sustaining increased systemic oxygen delivery with ECMO.

Therefore, the use of selective cytokine blockers, such as the IL-6 receptor blocker, tocilizumab,⁴ and direct hemoperfusion therapy with polymyxin B-immobilized fiber cartridges (PMX-DHP), which is an extracorporeal circulation therapy similar to ECMO, would be beneficial.⁵ Although the efficacy of PMX-DHP against ARDS due to endotoxic shock induced by gram-negative bacterial infection remains controversial, it has been reported to be efficacious against ARDS due to cytokine storm. It is remarkable that amyopathic dermatomyositis patients with rapidly progressive interstitial pneumonia showed a decline in IL-6 level accompanied with improvement of respiratory condition after treatment with PMX-DHP.⁶

We reported the rapid improvement of oxygenation, i.e., an increase in PaO₂/FiO₂ ratio from 72.4 to 216.0, with only 4 hours of PMX-DHP treatment for 2 days in the previous 2009 H1N1 virus pandemic.⁷ This accumulation of information on removing cytokines and other circulating mediators during PMX-DHP treatment would allow its optional use for ARDS raised by the cytokine storm in COVID-19.

Was it clear whether treatment targeting cytokine storms was performed in each report concerning ECMO use included in the review by Haiduc et al.? Further investigations of the relationship between the presence and absence of such treatment and survival rate, withdrawal rate, and wearing period of ECMO patients would make their review more attractive.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

Haruhiko Ogawa and Hidesaku Asakura wrote the manuscript. Haruhiko Ogawa and Yasushi Kakuchi were involved in treating patients.

KEYWORDS

acute respiratory distress syndrome, coronavirus disease 2019, direct hemoperfusion therapy with polymyxin B-immobilized fiber cartridges, extracorporeal membrane oxygenation, selective cytokine blockers

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