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Commentary: Extracorporeal membrane oxygenation (ECMO) in the coronavirus disease 2019 (COVID-19) pandemic; When, how, and to whom

Won Kyung Pyo, MD, and Joon Bum Kim, MD, PhD

The coronavirus disease 2019 (COVID-19) pandemic has been extended longer than half a year, causing millions of deaths. As immunization coverage has increased, the primary goal of medical care converged to the treatment of severe patients under the concept of those “with COVID-19.” Extracorporeal membrane oxygenation (ECMO) has played a role as a rescue therapy for people with refractory hypoxemia. Although a large volume of data regarding ECMO use was released from various centers throughout the world, the enormous amount released within a limited time frame or from a small study-sample size with short study period made it difficult to review the effectiveness and indication of ECMO in the COVID-19 surge.¹⁻⁴

Prolongation of this viral outbreak had led to a critical shortage of resources. Accordingly, the use of ECMO, which is a resource-consumptive therapy, was limited. Furthermore, although the effectiveness of ECMO was confirmed during the Middle East respiratory syndrome outbreak and H1N1 pandemic, early reports presented unpromising outcomes of ECMO use, with nearly 90% mortality.^{5,6} Thus, allocation and effectiveness of ECMO became major concerns.

In the current issue of the *Journal*, Saeed and Silvestry⁷ concisely summarize the history and outcome of ECMO

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CENTRAL MESSAGE

Further research regarding to ECMO use may provide answers to its optimal allocation and effective use in the COVID-19 pandemic.

use throughout the COVID-19 pandemic. There is no evidence to establish exclusive criteria for ECMO placement because of this severe form of viral pneumonia. However, differentiated guidelines might be contemplated considering the priority issue in resource uses, and the authors well outlined the consensus based on that. In the context of effective allocation of resources restrained, criteria for discontinuation of ECMO also should be pondered, considering the circumstances that candidate patients exceed ECMO resources. Moreover, technical considerations were demonstrated in detail. By including adoption of a novel single dual-lumen right atrial-pulmonary artery device, various cannulas or strategies were precisely introduced and practically applicable in the field.

Despite the proven efficacy of vaccination and some therapeutic drugs recently introduced, this lethal viral disease will continue to prevail for the time being, and there will still be patients with severe respiratory failure. As many countries pose an unprecedented burden on health care services, it is important to allow judicious use of resource-intensive treatments such as ECMO. Therefore, further studies pertaining to its outcomes should be allowed to proceed to achieve effective and efficient ECMO use against COVID-19.

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