Extracorporeal Membrane Oxygenation Support in Management of Severe Respiratory Failure Secondary to 2009 Influenza A(H1N1) Virus

To the Editor:

We read with great interest the recent article by Miller and colleagues (April 2010) reporting their experience with 47 patients who were admitted to the ICU with 2009 influenza A(H1N1) [A(H1N1)] virus infection in Utah. The authors stated that the severity of illness and mortality (27%) in their cohort who received usual care for ARDS (ie, low tidal volume, low pressure ventilation) was similar to that demonstrated in the Australia and New Zealand series using extracorporeal membrane oxygen (ECMO).

We would like to point out that the patient characteristics in these two cohorts are not similar, and direct comparison between the two groups is not possible. We would suggest that in the management of patients with A(H1N1)-associated respiratory failure unresponsive to conventional ventilation, ECMO should be considered.

The Australia and New Zealand Extracorporeal Membrane Oxygenation Influenza Investigators recently published an exhaustive review of all Australian or New Zealand patients who were treated with ECMO for severe A(H1N1)-associated ARDS in multiple centers. Of the 194 patients given mechanical ventilation for confirmed A(H1N1) infection, 61 (31%) received ECMO. The overall mortality was 13% (26/194). The mortality for patients who received mechanical ventilation was 9% (12/133) and 23% (14/61) for ECMO. Affected patients were often young adults, were pregnant or postpartum, were obese, had severe respiratory failure before ECMO, and received prolonged mechanical ventilation and ECMO support. A mortality rate of 13% overall and 23% in the ECMO group should be interpreted as a positive outcome, considering the severity of the illness.

The recently published A(H1N1)-specific supplements in the Extracorporeal Life Support Organization guidelines expressed the need for a lower threshold for conventional optimal treatment to be considered inadequate and for ECMO to be used promptly. The provision of an ECMO service requires high levels of expertise and extensive staffing resources. The expense of ECMO treatment may be further minimized with strategies such as setting up large-scale specialized treatment centers in strategic locations. This would ensure intensive accumulation of management experience as well as facilitate communication and organization within centers, accelerating the advancement of management techniques. As such, ECMO treatment would then be optimized, eventually reducing the duration of ventilatory support required for recovery, making it more cost-effective if increased patient survival is attained. The integration of ECMO into current treatment strategies for A(H1N1)-induced respiratory failure will likely improve patients’ outcomes.

Tristan D. Yan, PhD
Chin-Leng Poh
Julie Martens-Nielsen, MB
Sydney, NSW, Australia

Affiliations: From the Department of Cardiothoracic Surgery (Dr Yan and Ms Poh), and the Department of Intensive Care Services (Dr Martens-Nielsen), University of Sydney, The Royal Prince Alfred Hospital; and The Baird Institute for Applied Heart and Lung Surgical Research (Dr Yan and Ms Poh).

Financial/nonfinancial disclosures: The authors have reported to CHEST that no potential conflicts of interest exist with any companies/organizations whose products or services may be discussed in this article.

Correspondence to: Tristan D. Yan, PhD, University of Sydney, Department of Cardiothoracic Surgery, Royal Prince Alfred Hospital, Sydney, NSW, 2050, Australia; e-mail: Tristan.Yan@hotmail.com

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DOI: 10.1378/chest.10-0333

REFERENCES


Response

To the Editor:

We appreciate the interest of Dr Yan and colleagues in our case series of patients admitted to ICUs in Salt Lake County, Utah, during the first wave of the novel 2009 influenza A(H1N1) pandemic, which appeared in a recent issue of CHEST (April 2010). They suggest differences between our cohort and the cohort of patients who were critically ill with influenza and who received extracorporeal membrane oxygenation (ECMO) in Australia and New Zealand. The primary focus of our paper was to report our experience and epidemiologic observations. In the absence of a randomized clinical trial, “salvage therapies” such as ECMO should not be advocated. Multiple such interventions in patients who had ARDS have proven ineffective in clinical trials. In our experience,