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The role of ECMO in acute interstitial lung disease

Nicholas Barrett

Address for Correspondence:

Nicholas Barrett

Department of Critical Care, Guy's and St Thomas' NHS Foundation Trust, London SE1 7EH, UK

Email: Nicholas.barrett@gstt.nhs.uk

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Interstitial lung disease comprises a heterogeneous group of histologically distinct pathological entities characterized by a diffuse inflammatory process affecting the lung parenchyma. Classification of interstitial lung disease is complex and usually determined by a combination of clinical features, radiological, particularly computed tomography, appearance, and findings at lung biopsy. Interstitial lung disease presentations can range from slowly progressive interstitial pneumonitis to more rapidly progressive vasculitic, eosinophilic, and acute fibrotic diseases. In the acute form, interstitial lung disease can, over a period of days, manifest as bilateral diffuse pulmonary infiltrates, causing a significant disturbance of respiratory function. Patients characteristically have very poor dynamic compliance and poor gas exchange. The outcome of patients with interstitial lung disease admitted to the Intensive Care Unit (ICU) has historically been very poor. This is thought to be a combination of both the lack of reversibility of the underlying respiratory problem and further damage to the lungs associated with necessarily invasive mechanical ventilation.¹⁻³ The pro-inflammatory effects of invasive ventilation have been well described and are proportional to both tidal ventilation and pressure within the lung. There are a number of potential treatment options now available, which may help to modify the course of the disease,⁴ particularly in cases where there is a very high level of inflammation within the lung. Treatment options currently available include high-dose steroids, rituximab, and cyclophosphamide. Recently patients with acute interstitial lung disease have been offered extracorporeal membrane oxygenation (ECMO) as both a life-sustaining supportive therapy and a means of avoiding ventilator-induced lung injury, and results are improving, particularly in patients with acute interstitial lung disease.⁵ One of the benefits of ECMO is that it can allow patients to be awake and undertake physical and pulmonary rehabilitation.⁶ This may be of

particular benefit in the interstitial lung disease population, where a bridge to transplant is being considered. The latest evidence for the use of ECMO in interstitial lung disease will be reviewed, including clinical phenotypes which appear to particularly benefit from ECMO as a bridge to recovery. Some patients who present with what is assumed to be an infective pneumonia will ultimately progress to developing a progressive acute interstitial lung disease and it is essential to differentiate such patients from those with acute respiratory distress syndrome. In patients with acute interstitial lung disease, there

are treatments which may modify the course of the disease, whereas the predominant management of acute respiratory distress syndrome is largely avoiding lung inflammation to prevent the progression. A strategy for investigation and the key clinical and physiological indicators of potential acute interstitial lung disease will be discussed.

Keywords: extracorporeal membrane oxygenation, ECMO, interstitial lung disease

REFERENCES

1. Gungor G, Tatar D, Salturk C, Çimen P, Karakurt Z, Kirakli C, Adigüzel N, Ediboglu Ö, Yilmaz H, Moçin ÖY, Balci M, Yilmaz A. Why do patients with interstitial lung diseases fail in the ICU? A 2-center cohort study. *Respir Care*. 2013;58(3):525–531.
2. Blivet S, Philit F, Sab JM, Langevin B, Paret M, Guérin C, Robert D. Outcome of patients with idiopathic pulmonary fibrosis admitted to the ICU for respiratory failure. *Chest*. 2001;120(1):209–212.
3. Fernandez-Perez ER, Yilmaz M, Jenad H, Daniels CE, Ryu JH, Hubmayr RD, Gajic O. Ventilator settings and outcome of respiratory failure in chronic interstitial lung disease. *Chest*. 2008;133(5):1113–1119.
4. Meyer KC. Immunosuppressive agents and interstitial lung disease: What are the risks? *Expert Rev Respir Med*. 2014;8(3):263–266.
5. Trudzinski FC, Kaestner F, Schäfers H-J, Fähndrich S, Seiler F, Böhmer P, Linn O, Kaiser R, Haake H, Langer F, Bals R, Wilkens H, Lepper PM. Outcome of patients with interstitial lung disease treated with extracorporeal membrane oxygenation for acute respiratory failure. *Am J Respir Crit Care Med*. 2016;193(5):527–533.
6. Morris K, Osman L. Physiotherapy on ECMO: Mobility and beyond. *Qatar Med J*, 4th Annual ELSO-SWAC Conference 2017: DOI:10.5339/qmj.2017.swa-celso.58.