Intensive Care Med (2013) 39:1669
DOI 10.1007/s00134-013-3001-1

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Predicting mortality while on veno-venous extracorporeal membrane oxygenation

Received: 4 June 2013
Accepted: 7 June 2013
Published online: 19 June 2013

Dear Editor,

We read with great interest the paper of Pappalardo et al. [1]. In this paper, the authors constructed a very nice model predicting the mortality risk while on veno-venous extra-corporeal membrane oxygenation (vvECMO) in patients with acute respiratory distress syndrome (ARDS) due to H1N1 pneumonia. These patients were analyzed retrospectively from a large Italian vvECMO network [2]. Until publication of this paper, inclusion and exclusion criteria for vvECMO treatment were based on expert opinion [3]. The authors constructed the model from the retrospective data of 60 patients, of which 82 % had H1N1 pneumonia with a survival rate of 71 %. The remaining ARDS patients had a survival rate of 52 %. In another validation set containing 74 patients, the authors tested their model: the area under the curve (AUC) of the receiver operating characteristic (ROC) was 0.69 to predict mortality while on ECMO with a ECMOnet score >4.5 points, with a sensitivity of 51 % and a specificity of 76 %.

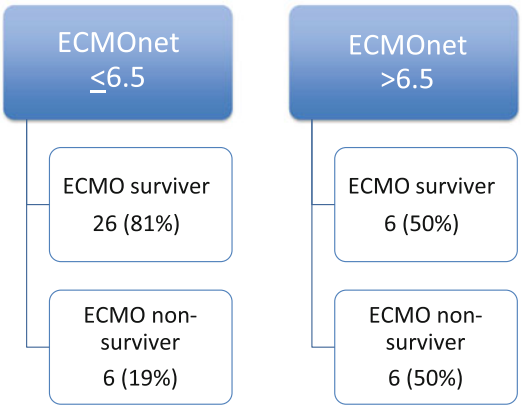

Fig. 1 The number of patients (%) alive and deceased while on veno-venous extracorporeal membrane oxygenation (ECMO) with a ECMOnet score cutoff point of 6.5

In our center, we have treated 44 patients with vvECMO: 50 % for bacterial pneumonia, 20 % for viral pneumonia and 27 % for auto-immune pneumonitis disease. The overall survival rate while on vvECMO was 73 %. When applying the ECMOnet score to our patients, the optimal cut-off point (calculated with the Youden index) was an ECMOnet score of 6.5. The AUC with an ECMOnet score >6.5 was exactly 0.69 for predicting mortality while on ECMO with a sensitivity of 50 % and a specificity of 80 % (see Fig. 1). AUC of the oxygenation index and APACHEII was 0.52 and 0.54, respectively.

Therefore, it seems that the ECMOnet score is a promising scoring system with a fair specificity in predicting mortality while on vvECMO, although with a higher cut-off point. At least, the ECMOnet score is much better than traditional scoring systems such as oxygenation index or APACHEII.

Conflicts of interest D. Reis Miranda and D. Gommers have received fees from NovaLung (http://www.novalung.com). R. van Thiel has no conflicts of interests.

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