

# Extracorporeal cardiopulmonary resuscitation in out-of-hospital cardiac arrest in relation to organ donation

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Online publish-ahead-of-print 29 August 2020

**This commentary refers to ‘Extracorporeal cardiopulmonary resuscitation in out-of-hospital cardiac arrest: a registry study’, by W. Bougouin *et al.*, 2020;41:1961–1971.**

With great interest, we have read the article by Bougouin *et al.* on extracorporeal cardiopulmonary resuscitation (CPR) in patients with an out-of-hospital cardiac arrest (OHCA) using extracorporeal membrane oxygenation (ECMO).<sup>1</sup> An important study in a field where mortality rates remain high and the search for the best therapy and patient selection continues. In the largest ECMO registry to date, there were 13 191 patients who received resuscitation for OHCA of presumed cardiac cause and included 525 patients (4%) managed with extracorporeal-CPR because sustained return of spontaneous circulation (ROSC) was not achieved. Among patients treated with extracorporeal-CPR, 8.4% was discharged alive, compared with 8.6% in the conventional-CPR group.<sup>1</sup> This shows that we need to define better which patients might benefit the most from this therapy, such as patients with an initial shockable rhythm, transient ROSC, and limited delay.

One aspect we believe is underexposed in the manuscript is the potential of ECMO in the OHCA setting leading to eventual organ donation. Of course, organ donation should not be the driving force to choose for extracorporeal-CPR. Surviving the OHCA should always be the primary goal of CPR. However, when the patient's life cannot be saved due to severe neurological impairment or brain death, eligibility for organ donation should be evaluated and discussed with the family.

In the manuscript, Bougouin *et al.* demonstrated that 4% of patients in the extracorporeal-CPR group became an organ donor after brain death compared with 1% in the conventional-CPR group.<sup>1</sup> Although this increase may seem small, it is of significance in an era where organ donors are limited.<sup>2</sup> Whereas the incidence of brain

death was higher in extracorporeal-CPR-treated patients in this study, ECMO may preserve other organ function for a possible donation procedure.

Practically, this situation is comparable to donation after circulatory death (DCD), where the organs are perfused using ECMO as a means of normothermic regional perfusion. The only difference is seen in the clamping of the descending aorta in abdominal donation and clamping of the aortic arch vessels and internal jugular veins from and to the brain in thoracic donation.<sup>3,4</sup>

In this manner, one extracorporeal-CPR patient, whose life could not be saved, might be able to donate several organs and as such is able to save several patients waiting for a donor organ. Is it known in the study of Bougouin *et al.*, how many donations out of the 4% mentioned were multi-organ donations? In our opinion, these data should be further explored as this might (indirectly) be a lifesaving procedure that should be shared with all of the medical community dealing with OHCA patients.

**Conflict of interest:** none declared.

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