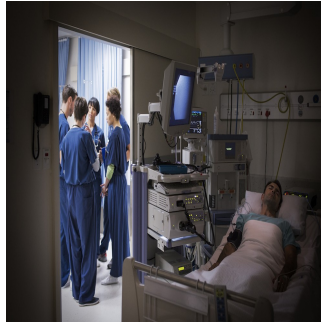


Organ Donation After Extracorporeal Cardiopulmonary Resuscitation



With the global demand for organ transplants on the rise, the shortage of available organs has worsened, leaving the supply insufficient to meet the growing need. One way to address this crisis is to identify potential organ donors, particularly by screening for brain death in ICUs, especially after cardiac arrest.

Extracorporeal cardiopulmonary resuscitation (ECPR) is used to revive patients from out-of-hospital cardiac arrest. However, implementing ECPR presents complex ethical challenges, mainly because it often results in patients being placed on mechanical support with limited chances for neurological recovery. Studies have indicated that ECPR patients have higher organ donation rates compared to those receiving conventional CPR, suggesting an increased potential for organ donation through ECPR. However, limited data exist on the outcomes of organ recipients from ECPR donors compared to non-ECPR donors.

To address this gap, a research team led by Senior Lecturer Tetsuya Yumoto from Okayama University, Japan, examined organ donation patterns and recipient outcomes among donors who experienced cardiac arrest and received ECPR followed by discontinuation of extracorporeal membrane oxygenation (ECMO) and those who did not receive ECPR. Their findings are published in *Critical Care*.

The researchers believe that the practice and prevalence of organ donation after decannulating donors from ECMO have not been studied well. Therefore, a thorough investigation of organ donation practices post-ECPR, including donor characteristics and the impact on recipients, was needed to understand the feasibility of organ donation after an episode of cardiac arrest.

The researchers extracted data from the Japan Organ Transplant Network Database. They included all deceased organ donors from July 17, 2010, to August 31, 2022, focusing on those who had at least one instance of cardiac arrest and dividing them based on whether they received ECPR or not and the type of donation (brain death or circulatory death). They compared the ECPR and non-ECPR groups regarding the timeline of the organ donation process and graft survival rates.

Until new guidelines were implemented on January 1, 2024, patients under ECMO treatment could not be diagnosed with brain death in Japan. Therefore, only patients decannulated from veno-arterial (VA) ECMO during this study could be diagnosed with brain death.

Among 370 donors diagnosed with brain death after cardiac arrest, 7% had undergone ECPR, and 93% had not. In the ECPR group, patients were on VA-ECMO support for a median duration of three days. Compared to the non-ECPR group, the ECPR group experienced significantly longer intervals from hospital admission to organ procurement (13 days versus nine days), indicating a delayed opportunity for organ donation.

The researchers note that lung graft survival rates were much lower in the ECPR group than in the non-ECPR group. Meanwhile, the graft survival rates of other organs were not significantly different.

Among 160 donors who experienced circulatory death, 27 underwent ECPR, while 133 did not. The interval from hospital admission to organ procurement and the graft survival rates were not significantly different between the ECPR and non-ECPR groups. Regardless of the cause of death (brain or circulatory), the number of organs donated was similar.

Considering these findings, ECPR may be a viable method of addressing the organ shortage by potentially increasing the number of organs available for transplantation.

This study underscores the need to provide appropriate information regarding organ donation as an option for end-of-life care, regardless of ECMO treatment. It also highlights the importance of training and educating clinicians in emergency or critical care settings to optimise the organ donation process.

Source: [Okayama University](#)

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Published on : Sat, 22 Jun 2024