

Uncontrolled donation after circulatory death and SARS-CoV2 pandemic: still feasible?

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Donors after uncontrolled donation after circulatory death (uDCD) are acknowledged as a potential donor pool even if not all European countries have developed this program due to its organizational, ethical and legal issues [1–5]. On an organizational view, this program implies a synergistic interplay between the hospital (mainly the emergency physicians and the Extracorporeal Membrane Oxygenation (ECMO) team) and the emergency medical system, which timely alerts the emergency department (ED) in the presence of a person aged 65 years or less with a witnessed refractory out-of-hospital cardiac arrest (OHCA). Time is crucial for both uDCD and OHCA programs (Fig. 1), though differently. In the refractory OHCA program, time (mainly from cardiac arrest to ECMO start) is ‘brain and heart’ because it is known to affect cardiac and neurological recovery. Within the uDCD program, time (mainly from cardiac arrest to normothermic regional perfusion) affects organ viability since strictly related to ischemia-reperfusion injury (Fig. 1). Whenever the emergency physician and the ECMO team consider the patient not eligible for therapeutic ECMO [6], a uDCD program can be assessed with the involvement of the transplant coordinator [3,7].

In the context of severe acute respiratory syndrome coronavirus 2 (COVID) pandemic that had a dramatic impact on the landscape of organ donation and transplantation all around the world [8], questions may arise on the feasibility of an uDCD program, since the time necessarily needed for the screening tests (nasopharyngeal swab and bronchoalveolar lavage) for COVID of the potential uDCD might further affect the entire process which is itself quite complex.

During the last months, increasing evidence supported the notion that transplantation from COVID donors is safe and feasible, provided standardized testing and management [9]. The process of selection of donors and recipients has to be highly selective, and the decision is most frequently taken on a case-to-case basis. Though SARS-CoV2 RNA was detected in the heart, liver and kidneys of deceased patients [10], transmissible and viable virus may not be present in organs other than the lung. That is why transplantation may not result in clinically relevant infection in the patient [11]. Furthermore, increased

availability of COVID vaccination is believed to mitigate the risk of donor-derived COVID.

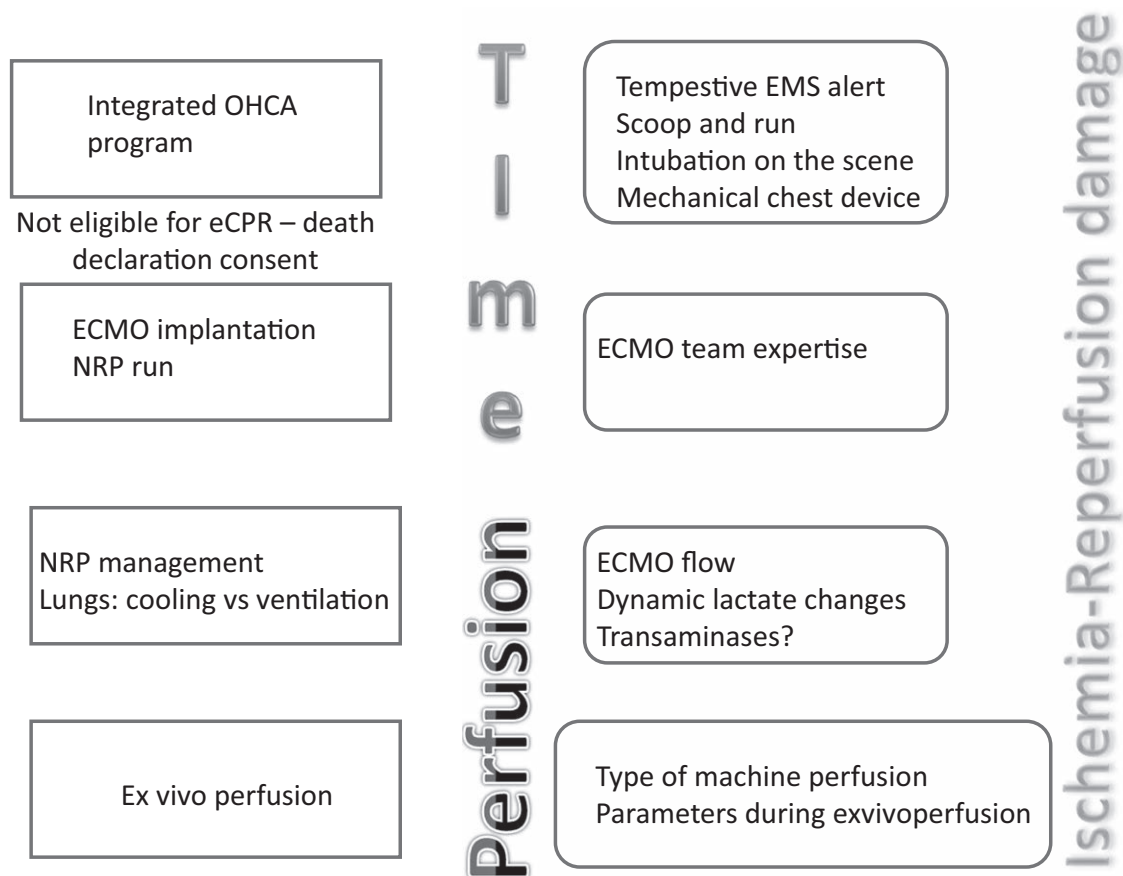
On 21 August 2020, the Italian National Authority (Centro Nazionale Trapianti) stated that COVID-positive donors should not be considered a priori ineligible for transplant, and from November 2020, grafts from deceased donors with active COVID infection were allowed to be considered for urgent-need transplant candidates, who were known to be COVID positive, with past COVID-19, and were able to sign an informed consent. Urgent-need candidates are also considered if vaccinated with a documented positive response. An infectious disease transplant expert is involved case by case. In Italy, from 1 November 2020 to 21 November 2021, 22 liver transplants and three heart transplants were performed from 22 COVID-positive donors. In an Italian multicenter series, the results of the first 10 consecutive liver transplantation cases from COVID-positive brain-dead donors were recently reported. Recipients were followed up for at least 5 months. Only one recipient remained persistently positive up to 21 days after transplantation with no clinical sign of disease, but none of the remaining recipients was found to be positive for COVID during the follow-up [12].

Similar results were reported in a small series of 10 kidneys from five deceased COVID-positive donors (four brain-death donors and one controlled DCD). For all 10 recipients, outcomes were excellent with a follow-up of 8–16 weeks [13].

There is no clear contraindication for not including an uDCD donor in the screening test for COVID infection and for the assessment of criteria for liver and kidneys transplantation. A meta-analysis [14] reported nearly two times higher odds of admissions with OHCA in the COVID pandemic period compared with the pre-pandemic period of 2019. Unfortunately, an increased rate of OHCA mortality was also documented probably due to a higher percentage of unwitnessed cardiac arrest, and a proportion of OHCA patients had suspected or confirmed COVID infection [15].

Taken into account the increased incidence of OHCA and the shortage of organs during COVID pandemic, uDCD

Fig. 1



Key factors in uDCD pathway.

program should be still considered as an added-on activity, especially in experienced centers. Local protocols for uDCDs have to be adapted taking into account the following factors.

First, on ED admission, a screening test (nasopharyngeal swab and bronchoalveolar lavage) for COVID should be performed for all patients aged 65 years or less with refractory OHCA. A detailed history of COVID infection, COVID-related symptoms and vaccination doses should be collected by the transplant coordinator. Afterward, an infectious disease transplant expert should be timely consulted.

Second, whenever an uDCD donor results COVID positive, a dedicated pathway for COVID-positive patients (from the ED to the operating room) should be planned and timely available within the hospital in order to guarantee the optimal protection to personnel.

Finally, since the uDCD program is time-dependent, the transplantation system should be ready for an appropriate and rapid allocation based on a highly selective selection of recipients.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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