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Behind enemy lines: How to enlarge heart transplant criteria

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When no remaining therapeutic options are available (optimal medical therapy, cardiac resynchronization, coronary revascularization, valve surgical or percutaneous interventions), only heart transplantation may reverse the natural clinical history of end-stage heart failure (HF) patients. In fact, in the context of reduction of donors and increase of potential recipients (given the impressive improvement in therapeutic options for many cardiovascular diseases), one out of five patients dies without transplantation due to graft shortage [1]. Given this, the only way to reduce death rate on the waiting list in end-stage chronic HF patients is the use of hearts from the so-called expanded criteria donors (ECD). The main variable associated with expanding criteria for heart acceptance is to accept hearts from older patients. Increased donor age means accepting hearts from people likely to be bearing some cardiovascular risk factors, with a rise in coronary artery disease (CAD) prevalence and a potential for donor-transmitted coronary atherosclerosis (DTCA) [2].

In the paper by Ivanes et al. [3] published in the present number of International Journal of Cardiology, the authors provide an important contribution to the major clinical challenge that all transplant centres must face. The dilemma whether to accept or not a heart classified as ECD is often very difficult to solve, and frequently the decision is based just on clinical evaluations, and sometimes on the severity of the potential recipient's clinical condition ("urgent" vs "elective" indication to transplant). However, it is likely that this approach results poorly appropriate, as the presence of coronary artery disease on the donor's heart implicates a significantly worse outcome than its absence [4]. So, it should be mandatory to identify more strict criteria in order to decide whether to accept an organ coming from a relatively elderly donor or from a donor with risk factors for cardiovascular disease.

With this in mind, the authors collected a population of 515 donors with ≥1 CAD risk factor and no obvious contraindications for cardiac procurement. 230 patients underwent coronary angiography (CA), 133 of which had CAD, 23% with at least one stenosis ≥50%. Performing CA (when possible, depending on logistical and organizational factors) increased the probability of heart procurement by 9% beyond variables such as female gender, age below 60 years old, no cardiac arrest, no intravenous adrenaline/dobutamine requirement and no treated hypercholesterolemia.

A second issue dealt with by the authors, perhaps of similar importance, is that when CA cannot be performed, it is possible to use a predictive model (including some simple clinical items such as female gender, non-vascular cause of death, absence of diabetes and BMI ≥ 25 kg/m^2) that may help to identify patients with normal coronary vessels, with good accuracy.

In many European countries including France, CA is not considered mandatory in the decision process of cardiac procurement in donors aged over 45. Transplant teams often request it on a case-to-case basis in ECD but this investigation cannot always be performed due to the difficulty of access to CA that raises issues of infrastructure distribution, as well as financial and human resources.

In this way, in the present paper it emerges that patients with CA had similar clinical characteristics with patients that did not have CA suggesting that performing or not CA is often not a "clinical" but an "organizational" issue. Still, even if there were a significant need for expanding the donor pool in the general context of lack of grafts, we would need to ensure an optimal transplant result. Even if the score for CAD exclusion proposed by the authors were to work well, the key message that we could receipt from a similar work would be that health systems have to make every effort to ensure CA before cardiac transplantation in ECD, as this procedure is related to a far better transplant outcome. Lastly, another merit of works like the present, could be to stimulate further studies on the same topic. It would be important to design prospective studies aimed to clarify whether ECD with CAD may be acceptable for donors in case of contextual revascularization by bypass grafting during the transplantation procedure or percutaneous coronary intervention immediately after the transplantation itself.

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Conflict of interest

The authors report no relationships that could be construed as a conflict of interest.

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