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EDITORIAL COMMENT

Heart transplantation: Current outlook☆

Transplantação cardíaca – perspetivas atuais

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Over 40 years after the first successful heart transplant in humans, it remains the treatment of choice for a selected group of patients with advanced heart failure (HF), despite the considerable progress made in HF treatment.[1] Improved medical therapy has doubled the life expectancy of patients with HF and left ventricular (LV) systolic dysfunction,[2] while in some patients cardiac resynchronization therapy can improve functional class, reduce the frequency of hospitalizations and increase survival, and implantable cardioverter-defibrillators reduce sudden death and late mortality.[3,4] A significant number of patients with coronary and/or valve disease are currently accepted for conventional cardiac surgery or ventricular volume reduction surgery, with good medium-term results.[5] Successive advances in ventricular assist devices, now in their fourth generation, mean that from the clinical standpoint, there are a variety of options available, ranging from temporary support and a bridge to possible transplantation to permanent therapy.[6]

Although it is still the gold standard treatment for advanced HF, with expected survival of more than 10 years and improved functional capacity and quality of life, heart transplantation is reserved for a small group of patients, both because there are other therapeutic options for less advanced HF, and due to the inherent limitations of the technique.[7] The pool of potential donors is relatively small, despite the fact that there is clinical consensus on optimizing management of donor hearts and increasing the use of marginal donors in particular circumstances.[8] The cardiological criteria for the indication of heart transplantation are generally agreed, but a significant number of potential recipients are never considered for transplantation, either due to contraindication to a lifetime of immunosuppression or because of their age and/or comorbidities, given the need to optimize use of a scarce resource.[9] Although there has been gradual but sustained improvement in long-term outcomes following transplantation, there are barriers, so far insuperable, to significant progress. These include deterioration of graft function caused by chronic rejection, and progressive increases in malignancy and serious infection.[10,11] At least as important are the cost of the procedure and ethical and legal considerations, which differ from country to country, as well as the local availability of effective and reliable ventricular assist devices.[12]

Heart transplantation is, therefore, increasingly an option for only a limited number of patients at very high risk, as the number of critical candidates, many of them under mechanical support, rises, and the number of outpatient candidates falls.[13,14] The combination of these factors has meant that the demand for heart transplantations has fallen to 5–7 per million population from the perceived need for 10 transplantations per million population 20 years ago. Furthermore, in wealthier countries, implantation of permanent ventricular assist devices or biventricular pacemakers is predicted to overtake heart transplantation, especially as clinical trials of LV assist devices have shown excellent short- and medium-term results in terms of quality-adjusted life years, although these tend to fall over time.[15,16]

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This state of affairs warrants some comment, especially in a country like Portugal, in which financial resources are scarce. The results of heart transplantation are better and more cost-effective when patients are treated before they reach a critical stage, and risk stratification can be improved with existing clinical decision instruments.[17] Furthermore, greater efforts should be made to take full advantage of potential donors, since at the moment it does not appear feasible to establish a ventricular assist device program, the cost-effectiveness ratio of which is still unacceptable for a country like Portugal.[18] Finally, the work of heart transplantation teams (arguably the first heart teams of all) should be integrated into clinical units with knowledge and experience of state-of-the-art treatment of advanced HF. As the volume of procedures needs to remain high to ensure quality of treatment, other factors, such as the availability of alternative medical and surgical options as well as of different forms of circulatory support, and the size and demographics of referral areas, should also be taken into consideration.[19]

The 10-year experience of the University Hospital of Coimbra reported in the article published in this issue of the *Journal* is an important contribution to our knowledge of the current situation regarding heart transplantation in Portugal.[20] By Iberian standards, the Coimbra center's annual volume of activity is high, and they have accumulated considerable experience with over 250 procedures. Their long-term results are good, as are waiting times, graft ischemia times and candidates' hemodynamic status. The authors provide a detailed description of recipients' preoperative clinical characteristics, perioperative data and the early and late complications inherent to such procedures. It would have been interesting to see a comparison between different periods of the experience presented, as this would have shed light on recent developments in heart transplantation, such as changes in candidates' degrees of priority, the results of using marginal donors, and the effects of modifying treatment protocols. These will undoubtedly be the subject of future studies.

Conflicts of interest

The author has no conflicts of interest to declare.

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