Cardiac Transplantation for Congenitally Corrected Transposition of the Great Arteries: A Case Report

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ABSTRACT
Orthotopic heart transplantation (HTx) was successfully performed in a 46-year-old man with congenitally corrected transposition of the great arteries. Because of the need for an extraordinary length of aorta, we preserved the aortic arch during harvesting of the donor organ. The allograft was implanted using a biatrial technique, but the heart might have to be rotated clockwise due to the posteriorly located pulmonary artery. The patient was well at 4 years after HTx. HTx in corrected transposition of the great arteries is technically feasible. Preservation of the aortic arch of the donor’s heart may be necessary to achieve a good anatomic correction. The long-term results of such an operation are as good as other HTx procedures.

MANY PATIENTS WITH congenitally corrected transposition of the great arteries (L-TGA) develop heart failure, but only few cases undergo heart transplantation (HTx).1–3 According to the Registry of the International Society for Heart and Lung Transplantation in 2007, only 3.2% HTx were performed for congenital heart disease in the adult population.4

CASE REPORT
The 46-year-old man began to have heart palpitations in 1992. At a local hospital, he was diagnosed to have congenitally corrected transposition of the great arteries (L-type) with mild regurgitation of the systemic atrioventricular (A-V) valve. Over the following years, symptoms of exertional dyspnea became exaggerated, and echocardiogram showed severe A-V valve regurgitation. In 2000, he received a prosthetic valve replacement, which functioned well although the signs of congestive heart failure persisted. Despite maximal medical therapy, his condition deteriorated. The cardiac index was 1.9 L/min/m² and the pulmonary artery (PA) pressure, 63/45 mm Hg. Finally, he received an HTx in August 2003.

Operative Technique
During the harvest of the donor heart, we preserved the aortic arch. The PA was cut at the bifurcation. The recipient left femoral artery and both vena cavae were cannulated for cardiopulmonary bypass. The recipient heart was excised as usual. A biatrial technique was used for the atrial anastomosis. After finishing the anastomosis of the left and right atria, we brought the heart in a clockwise rotation for the PA anastomosis. The aortic anastomosis was the last performed. The three branches

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of the aortic arch were suture-ligated to extend the length of the aorta (Fig 1).

The postoperative course was uneventful. He was discharged from the hospital at 20 days after the operation. Follow-up echocardiography and coronary artery angiography were normal. He did not experience rejection and is doing well in posttransplant year 4.

DISCUSSION

Patients with unoperated L-TGA show a high prevalence of heart failure, partly due to myocardial perfusion defects of the systemic ventricles with right ventricular morphology.5 Because of the abnormal alignment of the great arteries in L-TGA, the transplantation required technical modifications. Reitz et al at Stanford University Medical Center first reported a successful HTx for corrected TGA in 1982.6 Since then, only a few cases have been reported in the literature.1–3 During removal of the donor heart, the arch is fully dissected to obtain extra length. We suggest removing the whole aortic arch together with the branches so that we do not have to use a vascular prosthesis. After completion of the anastomosis, some clockwise rotation of the donor heart is acceptable. There was no compromise in hemodynamics after HTx.

In conclusion, HTx for corrected transposition of the great arteries is technically feasible. Preservation of aortic arch of the donor heart may be necessary to achieve a good anatomic correction. The long-term results of this operation are as good as other HTx procedures.

REFERENCES