



First Case of Simultaneous Heart Plus Kidney Transplantation in Chile: Case Report

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ABSTRACT

Advanced renal disease is a formal contraindication to heart transplantation, and heart failure may make a patient ineligible for kidney transplantation. The International Society of Heart and Lung Transplantation has reported 336 simultaneous heart and kidney transplantations with a 70% rate of 5 year survival. Herein we have presented the first case of simultaneous heart plus kidney transplantation in Chile. The patient is a 62-year-old man with diabetes mellitus and arterial hypertension who in 1997 had a myocardial infarction with cardiogenic shock and acute renal failure. He underwent a coronary bypass but developed progressive heart failure, with an ejection fraction less than 20% and moderate mitral regurgitation. He required chronic hemodialysis and survived a cardiac arrest, receiving an implantable cardioverter defibrillator. Transplantation was performed in 2004 in 2 phases: initially a heart, followed by a kidney transplantation. Immunosuppression included Daclizumab, cyclosporine, mycophenolate mofetil (MMF) and steroids. He developed acute renal failure but did not receive dialysis. He left the hospital at 25 days posttransplantation. Two years following double transplantation, he has not shown acute rejection episodes of either the cardiac or the kidney graft. Both cardiac and renal functions are normal. In conclusion, simultaneous heart plus kidney transplantations offer a good alternative treatment for patients with advanced disease of both organs.

SURVIVAL after heart transplantation has improved, being nowadays 90% in the first year, with median survival of 9.6 years. Advanced renal disease is a formal contraindication to heart transplantation, and heart failure may make a patient ineligible for kidney transplantation. The first simultaneous heart plus kidney transplantation was reported in 1978; unfortunately, the patient died 15 days following transplantation due to gram-negative bacterial sepsis. There was no evidence of acute rejection in either organ. The first case of long survival of a simultaneous heart plus kidney transplantation was reported in 1986. Since then the number of simultaneous heart plus kidney transplantations has increased with good results.²⁻⁴ The International Society of Heart and Lung Transplantation recently reported 336 simultaneous heart plus kidney transplantations, with a 5 year survival rate of 70%.¹ Herein we have presented the first case of simultaneous heart plus kidney transplantation in Chile.

CASE REPORT

The patient is a 62-year-old man with diabetes mellitus and arterial hypertension for 15 years who suffered an anterior wall myocardial

infarction in 1997. He progressed into cardiogenic shock with an inotropic drug requirement, an intra-aortic balloon pump placement, and transient hemodialysis because of acute renal insufficiency. He underwent a coronary bypass procedure. He subsequently developed progressive heart failure, with an ejection fraction less than 20% and moderate mitral regurgitation despite treatment with losartan, carvedilol, furosemide, digoxin, and spironolactone, presenting with several admissions due to acute decompensations. His basal creatinine level was 2 mg/dL and blood urea nitrogen (BUN) was 45 mg/dL. On February 2003, in relation to a new acute decompensation, he developed progressive and irreversible renal failure requiring chronic hemodialysis. In November 2003, he survived a cardiac arrest episode and received an implantable cardioverter defibrillator (ICD). He was New York Heart Association (NYHA) functional class IV and listed for heart

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plus kidney transplantation. The pretransplantation studies showed a *PRA* 0% and *CMV IgG* positive.

The transplantation was performed in 2 phases in August 2004 after a negative cross-match test: first, a heart transplantation with the bicaval technique after an ischemic time of 167 minutes. After extracorporeal circulation was stopped and anticoagulation was reversed, the hemodynamic parameters were stable and the kidney transplantation performed with a cold ischemia time of 4 hours.

The immunosuppressive protocol included induction with Daclizumab, with the first dose administered between the heart and kidney operation, MMF (2 g daily) and steroids (1 mg/kg/d). Cyclosporine was begun on the sixth day. Immediately after surgery, the patient developed cardiac tamponade, requiring a second operation. His recovery was good, but he developed oligoanuria due to acute tubular necrosis. The peak levels were BUN 172 mg/dL and creatinine 5 mg/dL on day 14 posttransplantation, with no hyperkalemia, acidosis, or uremic signs. He did not require dialysis. The renal vascular resistance index was normal. His renal function improved progressively and he was discharged on day 25 posttransplantation.

The posttransplantation protocol of endomyocardial biopsies in the first year did not show any acute rejection signs. The left ventricular function was normal, with an ejection fraction of 65%. At the end of the first year he had not shown any angiographic evidence of coronary disease. Kidney graft did not show clinical or echographic evidence of an acute rejection episode. Renal function was normal by month 3, with a BUN of 32 mg/dL and a creatinine of 1.2 mg/dL, persisting in this way through the second posttransplantation year. Thirty-five days after the transplantation, he developed respiratory symptoms and fever. The diagnosis was CMV pneumonitis and he was treated with valgancyclovir. At

present the patient is NYHA functional class I, with no activity limitations, working full time, and playing sports.

DISCUSSION

Herein we have reported the first case of simultaneous heart plus kidney transplantation in Chile. The survival for simultaneous heart plus kidney transplantation is better than that for kidney transplantation alone after heart transplantation. Several groups have shown that patients with combined heart–kidney transplantation have a lower frequency of rejection than with the isolated organs. Our patient has not shown an acute rejection episode of either the heart or the kidney. He returned to work, discontinued dialysis, and recovered a good life quality. Simultaneous heart plus kidney transplantation is a good alternative treatment for patients with advanced disease of both organs.

REFERENCES

1. International Society of Heart and Lung Transplantation (ISHLT) web site: www.isHLT.org
2. Leeser D, Jeevanandam V, Furukawa S, et al: Simultaneous heart and kidney transplantation in patient with end-stage heart and renal failure. *Am J Transplant* 1:89, 2001
3. Blanche C, Kamlot A, Blanche D, et al: Combined heart–kidney transplantation with single donor allografts. *J Thorac Cardiovasc Surg* 122:495, 2001
4. Col V, Jacquet L, Squifflet J, et al: Combined heart–kidney transplantation: report on six cases. *Nephrol Dial Transplant* 13:723, 1998