Open Heart Surgery In Renal Transplant Recipient

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ABSTRACT

Transplant patients are the challenging subgroup of patients due to the increased morbidity associated with their immunosuppressive state. The number of transplant patients who undergo open heart surgery continues to increase as the knowledge gained in the treatment of these patients increases. We present a renal transplant patient who underwent open heart surgery where we share our experience in the management and the treatment of these patients.

Key Words: Open heart surgery, renal transplant.

ÖZET

Renal Transplantli Hastada Açık Kalp Cerrahisi

Transplantasyon hastaları, sahip oldukları immünosüpresif durumun yol açtığı artmış morbidite nedeniyle zor hasta grubundandırlar. Bu hasta grubu hakkında sahip olunan bilgi dağarcığı genişledikçe, açık kalp cerrahisi uygulanan transplantasyon hasta sayısı da artmaktadır. Açık kalp operasyonu uyguladığımız böbrek transplantasyonu geçirmiş hastanın operasyonu ve tedavisi ile ilgili deneyimimizi sunmaktayız.

Anahtar Kelimeler: Açık kalp cerrahisi, böbrek transplantasyonu.

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INTRODUCTION

Since Menzoian performed the first coronary artery bypass grafting (CABG) on a renal transplant recipient in 1974, many studies on cardiac procedures after renal transplant patients have been reported (1). These patients who are under immunosuppressive treatment have multiple comorbidities which may lead to the development of coronary artery disease. Subsequently, a significant number of survivors will need surgical intervention for their cardiovascular diseases. Herein we report a renal transplant patient who underwent CABG operation and share our peroperative experience in terms of operative management and patient care.

CASE REPORT

61 year-old male was admitted to our clinic with effort related dyspnea. The patient had diabetes mellitus and had been using insulin for the last 10 years. He also had history of renal transplantation 3 years ago. The coronary angiogram revealed 3-vessel disease. He was offered a CABG operation. Before the procedure, the patient was consulted with a nephrologist for preoperative management. He was using mycophenolate mofetil 500 mg and sirolimus 1mg twice a day and hydrocortisone 100 mg once a day as the immunosuppressive treatment. His preoperative medications were administered until the morning of the surgery. A stress dose of steroids was administered before the induction of anesthesia. The next dose was administered via nasogastric tube while the patient was entubated and then given orally the day after surgery.

In the operation, following median sternotomy, left internal mammarian artery and sapheneous vein were harvested.

Cardiopulmonary bypass was achieved through aortic and bicaval atrial cannulation. Cardiac arrest was maintained with cross clamping of the aorta and intermittant antegrade and retrograde isothermic blood cardioplegia under moderate hypothermia. Throughout the surgery, perfusion pressure was maintained between 60 and 70 mm Hg while the heart-lung machine was used in pulsatile mode. Vasoconstrictors were used as indicated. The urine output was closely monitored throughout the surgery. Furosemide was administered during the surgery to encourage diuresis to keep the urine output >30 ml/hr. Since the preoperative blood creatinin level of the patient was 1,01 mg/dl, hemofiltration during cardiopulmonary bypass was not attempted.

Four vessels were bypassed. The cross clamp time was 55 minutes and the bypass time was 120 minutes. Low dose inotropes, including dopamine and dobutamine, were used in the immediate postoperative period to stabilize hemodynamics in ICU. Diuretics were administered to maintain an adequate urine output, given that hydration and renal perfusion were satisfactory. Nephrotoxic medications such as angiotensin receptor inhibitors were prohibited. Cephazolin treatment was initiated prior surgery and continued until the first follow up. Renal function was closely monitored until discharge. Pulse steroids were initiated for graft rejection. The dose of immunosuppressant regimen was adjusted according to serum drug levels. Ultimate attention to wound and patient care was given. The patient stayed 1 day in ICU. The postoperative course was uneventful and the patient was discharged home on postoperative 6th day in good condition.

DISCUSSION

Despite cautious selection of patients who undergo renal transplantation, many continue to require cardiac interventions probably because of the high prevalence of risk factors including hypertension, diabetes, and hyperlipidemia. In addition, immunosuppressive agents may lead to progression or acceleration of native coronary atherosclerosis(2).

Although renal transplantation and CABG are routinely well-established procedures, the outcomes of open heart surgery has not been clearly defined in these patients. The most feared outcomes are infection, acute renal insufficiency and allograft rejection. In the literature, the reported rate of postoperative infection varies between 8.5-22.6% and the rate of early mortality is between 5.3-8.8%.The reported rate of postoperative renal insufficiency and graft rejection are 14-22.5% and 3.5-7.5%, respectively (2-6).

Immunosuppression and administration of stress dose steroids likely play a role in the increased number of observed infections. We believe ultimate care for perioperative infection is uttermost important in this group of patients. We therefore initiated prophylactic antibiotics before surgery and continued until the first follow up. We also encouraged early mobilization and pulmonary bath of the patient following early extubation. We avoided prolonged ICU and in hospital stay. We kept the patient in a private room during his entire hospital stay.

In the operation, we gave extra attention to the bleeding control in order to avoid blood transfusion in the postoperative term, which might bring forth additional risks of transfusion like renal problems and infection.

It was shown by other reports that renal allograft function remained mostly stable after cardiac operations in immunocompromised solid organ recipients(2). Despite use of nephrotoxic immunosuppressive agents and the potential added insult of cardiopulmonary bypass, the renal allograft function of our patient remained stable with no significant change in serum creatinine level by the time of discharge. Although there was no significant renal dysfunction, the stability of renal function was maintained through close monitoring of fluid intake and urine output. We believe that cardiac surgery in patients who received renal transplantation and have stable allograft function can be performed with acceptably low mortality. In terms of early mortality and allograft failure, if applicable, beating heart procedures, hence avoidance of cardiopulmonary bypass may be beneficial in this patient group.

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