



Case Report / Olgu Sunumu

Consecutive coronary artery bypass grafting and orthotopic living donor liver transplantation

Ardışık koroner arter baypas greftleme ve canlı donörden ortotopik karaciğer nakli

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ABSTRACT

Coexistence of coronary artery disease and end-stage liver disease is expected to have high mortality and morbidity rates. Coronary artery bypass grafting is a challenging obstacle in the treatment of this group. In this article, a 52-year-old male patient with Child A cirrhosis secondary to chronic hepatitis B and recurrent esophageal variceal bleeding was evaluated preoperatively and detected to have three-vessel coronary artery disease. Surgical revascularization was advised to treat coronary artery disease. Coronary artery bypass grafting was performed before orthotopic liver transplantation and consecutive orthotopic liver transplantation was implemented in less than 24 hours from living donor as an alternative approach. No major complication was observed and the patient was discharged with recovery.

Keywords: Coronary artery bypass grafting; coronary artery disease; orthotopic liver transplantation.

Severe coronary artery disease (CAD) is common in patients with end-stage liver disease (ESLD) and linked with high perioperative morbidity and mortality in this group of patients who require orthotopic liver transplantation (OLT) as the treatment of choice.^[1] Percutaneous coronary intervention (PCI) can be frequently performed prior to liver transplantation. Coronary artery bypass grafting (CABG) is an option for those who are not appropriate for PCI. However, this accompanies risk for hepatic deterioration after

ÖZ

Koroner arter hastalığı ve son dönem karaciğer hastalığı birlikteliğinin yüksek mortalite ve morbidite oranlarına sahip olması beklenir. Koroner arter baypas greftleme bu grubun tedavisinde zorlu bir engeldir. Bu yazıda, kronik hepatit B'ye bağlı Child A sirozu ve tekrarlayan özofagus varis kanaması olan 52 yaşında bir erkek hasta ameliyat öncesinde değerlendirildi ve hastada üç damar koroner arter hastalığı olduğu tespit edildi. Koroner arter hastalığını tedavi etmek için cerrahi revaskülarizasyon önerildi. Alternatif bir yaklaşım olarak koroner arter baypas greftleme ortotopik karaciğer naklinden önce uygulandı ve 24 saatten daha kısa bir süre içinde canlı donörden ardışık ortotopik karaciğer nakli gerçekleştirildi. Majör komplikasyon izlenmedi ve hasta şifa ile taburcu edildi.

Anahtar sözcükler: Koroner arter baypas greftleme; koroner arter hastalığı; ortotopik karaciğer nakli.

cardiopulmonary bypass (CPB).^[2] In this manner, combined CABG and OLT were performed to treat both diseases.^[3] Therefore, in this article, we report consecutive CABG and OLT operations in less than 24 hours as an alternative approach.

CASE REPORT

A 52-year-old male patient suffering from Child A cirrhosis secondary to chronic hepatitis B and

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recurrent esophageal variceal bleeding was evaluated preoperatively as a candidate for OLT. He had a history of diabetes mellitus and suffered from chest pain and dyspnea. Laboratory values were as follows, aspartate aminotransferase: 36 U/L, aminotransferase: 21 U/L, gamma-glutamyl transferase: 31 U/L, alkaline phosphatase: 69 U/L, lactic acid dehydrogenase: 852 U/L, total bilirubin: 1.7 mg/dL, direct bilirubin: 0.50 mg/dL, international normalized ratio: 1.38, albumin: 2.79 g/dL, total protein: 5.06 g/dL, amylase 44 U/L, blood urea nitrogen: 34.8 mg/dL, creatinine: 2.27 mg/dL, troponin T: 0.236 mg/mL, creatine kinase-MB: 2.80 mg/mL, D-dimer 3.1 ug/mL. Abdominal ultrasound showed chronic liver disease with nodulations and heterogeneous thickening. Coronary angiography was performed, which revealed totally occluded left anterior descending artery (LAD), 70% stenosis of circumflex artery (Cx) and 60% stenosis of right coronary artery (RCA). Echocardiographic study showed a left ventricular ejection fraction of 40%, normal pulmonary arterial pressure and mild mitral regurgitation. Preoperatively, superior mesenteric vein was partially thrombosed; however, portal vein was clear on computed tomography. The Organ Transplantation Council of our hospital decided to perform coronary bypass (due to three vessel disease) first and then liver transplantation gradually while making sure of the stability of the patient. A written informed consent was obtained from the patient. The patient was intubated and general anaesthesia was induced and maintained. He underwent CABG firstly. The chest was opened through a median sternotomy incision. After heparinization, the patient was placed to CPB using right and aortic cannulation. LAD was grafted by left internal mammary artery. Cx and RCA were grafted using saphenous vein. Sengstaken-Blakemore tube was held on stand-by position for a possible variceal bleeding. During the whole procedure, no bleeding was seen from the esophagogastric region. Activated clotting time was seriously followed to stay between 400-500 seconds to reduce bleeding risk. The patient was weaned from CPB and heparin was reversed with protamine. After the first operation, the patient was taken into intensive care unit (ICU) and followed as intubated and sedated. Intravenous therapy included dopamine 5 mcg/kg/min, cefazolin 3x1 g/day, and pantoprazole 2x40 mg/day. Drainage of 500 mL was seen from the chest tubes in 20 hours. No acute complication was observed after CABG. No drainage was seen in the last six hours. The patient underwent OLT 20 hours later. After native hepatectomy, 1230 g of liver from a 33-year-old living donor was transplanted to the patient. During the ICU

stay, eight units of concentrated erythrocyte, two units of fresh frozen plasma, and one unit of whole blood were given to the patient. Neither systemic nor surgical complication occurred during intraoperative period.

Postoperatively, atrial fibrillation (AF), which was resolved with amiodarone infusion, and mild pleural effusion were observed. No other complication was seen. He was discharged from the ICU on the sixth postoperative day and from the hospital on the 14th postoperative day.

DISCUSSION

Preoperative evaluation of CAD in cirrhotic patients is an important issue. Non-invasive tests for the detection of CAD have low sensitivity rates. Coronary angiography is advised to be performed in case of at least two atherosclerotic risk factors.^[4] Surgical treatments of CAD and ESLD are therapeutic challenges, in a manner. Without coronary revascularization, liver transplantation candidates are at high risk of myocardial infarction and heart failure. In contrast, CABG operation without liver transplantation in ESLD patients can lead to a tendency for bleeding complications. Coronary artery bypass grafting operation in cirrhotic patients has a mortality rate of 30-100%. Combined CABG and OLT has emerged as a solution for this trouble.^[5,6] Axelrod et al.^[2] reported five patients undergoing combined CABG-OLT operations. One-year survival was 80% with no perioperative death. Complications included cardiac arrest, pericardial effusion requiring pericardial window and acute rejection. DeStephano et al.^[7] also reported five patients with this combined procedure. One death unrelated to a coronary event was observed together with AF, cardiac tamponade, coagulopathy, acute renal and respiratory failure, which were handled successfully.

As an alternative approach, we performed CABG and OLT not simultaneously, but consecutively to reduce surgical complications. Hence, no complication was observed except for AF and reactional pleural effusion. Main disadvantage of hepatectomy during extracorporeal circulation is excessive bleeding.^[5] As a result, we proposed that a consecutive approach may reduce the bleeding risk caused by the combined approach. After the completion of the CABG, we stabilized the patient in terms of hemorrhage and hemodynamic aspects. Then, we applied OLT, which can be life-saving in selected and well-prepared patients. Multidisciplinary approach and teamwork is essential to reach sufficient outcome.

In conclusion, consecutive application of coronary artery bypass grafting and orthotopic liver transplantation may be a safe and effective option in

the treatment of coexistent coronary artery disease and end-stage liver disease with regard to surgical perspective.

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