Aortic valve replacement in a patient with liver cirrhosis and coagulopathy

Mohammad Hassan Nemati, MD
Behrooz Astaneh, MD · Mahmood Zamirian, MD

Abstract Open heart surgery in patients with end-stage liver disease is accompanied by various complications. Coagulopathy resulting from liver failure tends to cause uncontrollable hemorrhage. Severe aortic insufficiency has moderate to severe risk for liver transplantation. It can lead to heart failure, liver congestion, and finally rejection of the transplanted liver. Aortic valve replacement in patients diagnosed as having cirrhosis has a significant risk of mortality because of the above-mentioned complications. We present a patient with liver cirrhosis and severe aortic insufficiency who had thrombocytopenia and severe coagulopathy. Aortic valve replacement was performed successfully using cardiopulmonary bypass before the liver transplantation. Hemostasis management was done effectively peroperatively. The postoperative course was uneventful, and the patient was discharged after 10 days. Liver transplantation was performed successfully 2 months later.

Key words Liver cirrhosis · Aortic valve replacement · Cardiopulmonary bypass

Introduction

Open heart surgery in patients with end-stage liver disease is accompanied by various complications. Coagulopathy resulting from liver failure tends to cause uncontrollable hemorrhage. Development of hepatorenal syndrome and hepatic encephalopathy are the other potential complications.1,2

Severe aortic insufficiency has moderate to severe risk for liver transplantation. It can lead to heart failure, liver congestion, and finally rejection of the transplanted liver. Aortic valve replacement in patients diagnosed as having cirrhosis has a significant risk of mortality because of the above-mentioned complications.

There are three important decisions that must be made before operating on such patients: First, on the basis of the patient’s condition, the surgeon should decide whether to operate on the patient before or after transplantation. Second, the type of valve (mechanical or bioprosthetic) should be chosen. Finally, the surgeon must consider the hazards of operating on such patients who have coagulopathy because of liver failure.

Here we present a patient with advanced liver cirrhosis whose management was a matter of controversy. Aortic valve replacement was performed before the liver transplantation.

Case report

The 39-year-old man had advanced liver cirrhosis after developing viral hepatitis following dental procedures 7 years before presenting to us. The liver cirrhosis had been proved by liver biopsy, which had shown modified Knodell score grade 12/18 and stage 6/6. He was a candidate for liver transplantation.
On routine physical examination he was conscious and oriented. His systolic and diastolic blood pressures were 160 and 60 mmHg, respectively. A diastolic murmur in the aortic area and a bounding pulse were detected. The patient had a positive history for rheumatic fever and complained of chest pain and dyspnea. He was diagnosed as having New York Heart Association (NYHA) functional class III. Echocardiography showed color Doppler evidence of severe aortic valve regurgitation by showing diastolic flow reversal in the abdominal and descending aorta (Fig. 1). The left ventricular size was 55 mm in systole and 73 mm in diastole (Fig. 2). The ejection fraction was about 55%.

Because of the obvious risk of liver transplantation in such a cardiac-compromised patient, he was referred to our center in 2005 to assess the possibility of aortic valve