

Prolonged Anhepatic Phase for Acute Vascular Failure During Surgery

Francisco Javier León Díaz*, Miguel Ángel Suárez Muñoz, José Antonio Pérez Daga, Belinda Sánchez Pérez, José Luis Fernández Aguilar, Custodia Montiel Casado, José Manuel Aranda Narváz, Laura Romacho López, Julio Santoyo Santoyo
Liver Transplant Unit, Regional Hospital, Málaga, Spain

Abstract

Introduction: Total hepatectomy with temporary porto caval shunt involves an anhepatic phase until liver transplantation. The severity of the patient's state is conditioned by the physiopathologic alterations occurred during the anhepatic phase and the availability or not of organs in the short term.

Methods: We report the case of a male patient undergoing liver transplantation for liver failure caused by the hepatitis C virus (HCV). Until liver transplantation, the patient experienced an anhepatic phase of 22 hours secondary to acute vascular failure during surgery. The patient is alive at five follow-up years.

Conclusions: Total hepatectomy with temporary portocaval anastomosis in combination with appropriate management of physiopathologic alterations at the Intensive Care Unit improve survival in severely-ill patients awaiting transplantation.

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Abbreviations

CHV: C Hepatitis Virus

ICU: Intensive Care Unit

NTO: National Transplant Organization

TIPS: Transjugular Intrahepatic Portosystemic Shunt

Introduction

Liver graft failure immediately after transplantation jeopardizes receptor's life seriously due to both, the clinical situation and organ shortage in the short term. Total hepatectomy with temporary portocaval anastomosis was first described by Ringe [1] in 1988 and is recommended in the literature as a temporary measure until final transplantation when the organ causes clear adverse effects in the patient. The duration of the anhepatic phase in the scarce cases reported in the literature range from 24 to 36 hours, with outcomes worsening as the anhepatic time increases. We report the case of a patient with favorable course who experienced an anhepatic phase of 22 hours secondary to an acute vascular failure.

Case Report

A 57 year-old male patient with HCV-related chronic liver disease presented with episodes of upper gastrointestinal bleeding caused by rupture of varices (endoscopic ligation), recurrent encephalopathy and hepatorenal syndrome; with refractory ascites controlled after transjugular intrahepatic portosystemic shunt (TIPS) [2]. The patient is included in the waiting list for hepatocellular failure and is hospitalized for orthotopic liver transplantation.

Total hepatectomy is performed with preservation of the inferior vena cava by piggy-back and temporary portocaval shunt as described by Belghiti et al. [3]. Important technical difficulties are found during anastomosis from donor's vena cava to the receptor's suprahepatic venae. Arterio-arterial anastomosis between the aortic patch of the donor and the hepatic artery of the receptor are performed along with end-to-end portal anastomosis. Poor venous drainage is observed during simultaneous arterial and portal reperfusion, together with highly congestive liver, bleeding from the suprahepatic caval anastomosis suture, and hepatic subcapsular hematoma in the left liver lobe. In light of the difficulties found in controlling hemostasis and the severe clinical status of the patient, a transplantectomy and a new temporary portocaval shunt are performed.

The patient is admitted to the Intensive Care Unit (ICU) and an application for emergency Code 0 liver retransplantation is sent to the National Transplant Organization. After twenty two hours, the patient undergoes a relaparotomy and side-to-side caval anastomosis (Belghiti's technique). Portocaval shunt is successfully closed and end-to-end portal anastomosis is completed with satisfactory graft reperfusion. Arterial anastomosis between donor's celiac trunk and splenic artery and receptor's right hepatic artery. Flowmetry is optimal. Biliary end-to-end common bile duct anastomosis.

The patient is hospitalized in the ICU for nine days requiring mechanical ventilation for 36 hours and hemofiltration for 72 hours. While in hospital, the patient responds favorably and is discharged at 30 days with the following diagnoses: emergency liver retransplantation for acute vascular failure, renal failure, respiratory failure, neurotoxicity, herpes simplex labialis, atrial fibrillation, diabetes mellitus and hypertension. Immunosuppressive therapy with everolimus and mycophenolate mofetil plus steroids for neuropathology are prescribed. Ecodoppler reveals normal graft flows, with a favorable course of liver function and no immunologic complications at discharge. At present, the patient is alive after five follow-up years.

Discussion

Establishing an anhepatic phase after immediate liver graft failure has relevant systemic effects when liver metabolism is affected [4] with decreased gluconeogenesis and impaired synthesis of lactate and ammonium; these events cause hypoglycemia, lactic acidosis, coagulopathy and hyperammonemia that will result in cardiopulmonary dysfunction, renal failure and hepatic encephalopathy associated with cerebral edema [5].

Total hepatectomy with temporary portocaval anastomosis [1] in combination with an appropriate management of physiopathologic

*Corresponding Author: Dr. Francisco Javier León Díaz, Hepatobiliary Surgery, Avenida Carlos Haya - s/n - 29010 Málaga. Spain, Tel: +34665965074; E-mail: franjleondiaz@gmail.com

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alterations during the immediate postoperative period at the Intensive Care Unit improve survival in severely-ill patients awaiting transplantation. The long-term effects of a prolonged anhepatic phase need to be explored by animal testing.

Competing Interests

The authors declare that they have no competing interests.

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