


Having a Healthy Birth With a 100-Year-Old Liver

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Abstract

In March 2008, a 19-year-old woman required emergency liver transplantation due to acute-on-chronic liver failure. No living donor candidate was available. A marginal deceased liver that had been rejected by all the other centers was offered. The liver belonged to a 93-year-old woman and contained a hydatid cyst. Because of low donation rates in our country, we chose to accept the 93-year-old liver. The postoperative early and late courses were fortunately uneventful. Five years after transplantation, the woman became pregnant and gave birth to a healthy female baby. Today, the ages of the baby, mother, and the transplanted liver are 1, 26, and 100 years, respectively. A nonagenarian liver with hydatid disease was able to sustain its viability in a younger woman after transplant and also helped her bring in a new life into the world.

Keywords

Transplant donor, transplant recipient, pregnancy, aged, echinococcus, hydatid disease

Introduction

The liver is an organ with the highest known regenerative capacity in our body. The Greek mythological story that characterized the phenomenon when an eagle was sent by Zeus to feed on the ever-regenerating liver of the Titan Prometheus chained to the top of a mountain as a punishment for stealing fire from the gods. From this, the liver was named the “immortal organ” due to its highly regenerative capacity.¹ In the present case, we aim to present another interesting example of the great longevity of a 93-year-old liver transplanted into a 19-year-old female patient who was also able to give birth to a healthy child in the following years.

Case

A 19-year-old female was placed on the liver transplant list with a Model for End-Stage Liver Disease score of 24. During the waiting period, her general condition rapidly deteriorated; she developed clinical signs and symptoms of grade 3 hepatic encephalopathy. Despite medical support, her symptoms worsened and an emergency liver transplantation was scheduled due to acute-on-chronic liver failure. No living donor candidate was available, and a marginal donor organ that had been rejected by the other centers was offered to us by the National Coordination Center. The liver belonged to a 93-year-old (born in 1915) donor, which contained a hydatid cyst within the 6 and 7 segments of the liver, with degenerative contents and a calcified capsule. Because of the recipient’s urgent and life-threatening condition, we accepted this marginal graft. At surgery, the cyst was first washed out with cetrimide chlorhexidine solution, and

then a partial pericystectomy was performed on the back table and the degenerative content removed. After that, the liver was transplanted into the patient. No special techniques were used during the course of surgery; it was a smooth and a routine cadaveric deceased transplantation process.

The postoperative course was uneventful, and the patient was discharged from the hospital 18 days after surgery with the following prescribed drugs: tacrolimus as an immunosuppressant, aminosalicic acid, and a proton pump inhibitor. The postoperative long-term follow-up of the patient was also free of problems. She ceased taking the aminosalicic acid after the operation by her own decision and continued her follow-up in her hometown. She later married, and the couple decided to have a baby. She became pregnant during the fifth year after the transplantation.

During her pregnancy, she was followed up in the high-risk pregnancy clinic in her hometown hospital. She continued using tacrolimus as an immunosuppressant agent, with the drug blood levels routinely controlled. Her pregnancy follow-up was also smooth. She did not have any gestational diabetes, hypertension, or experience rejection or preeclampsia during her pregnancy. She gave birth to a healthy 3400 g, 51 cm, female, term (at the 40th gestational week) baby in the sixth year after liver transplantation by

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a normal transvaginal delivery. Today, the ages of the baby, mother, and the transplanted liver are 1, 26, and 100 years, respectively.

Discussion

As transplant surgeons, we always wish for the ideal donor liver to implant. The shortage of cadaveric livers often compels us to use the so-called marginal grafts to meet the needs of these patients. Liver donation from elderly donors is a challenge. The vascular changes in the aged donors are an important cause of graft loss but have been shown to be an irrelevant risk factor for hepatic artery thrombosis.² However, to meet the need for organs for patients on the waiting list, the age limit for donors has gradually increased upward; it was first raised to above the age of 60,³ then to above 70,⁴ and then even up to above 80.² Marginal organs are mainly used in elderly patients with a short estimated life span or in cases of hepatocellular carcinoma.⁵ In the series of Chapman et al, the oldest marginal donor age was 80 years, transplanted into a 68-year-old autoimmune hepatitis patient.⁶

In our case, due to the emergency situation, a liver from a donor over 90 years of age was used. We previously published this rare case as “an elderly liver with hydatid cyst can be used as a graft.”⁷ As far as we know, there exists no other report in the literature of a liver of this age (93 years old) being transplanted into a young patient (19 years old). The reason of this extreme situation is the low donation rate in our country where the number of total liver transplantations is approximately 1200 per year, and only 300 of them are from the deceased donors (the remaining 900 are from live donors).

It has been shown that nearly all transplanted livers will develop some kind of fibrotic changes years after the transplantation surgery, without any demonstrated significant cause.⁸ These fibrotic changes may be explained by immunologic interactions via auto-antibodies.⁹ Also, in cases where older marginal livers are used as donor grafts, fibrosis is more pronounced after the surgery.¹⁰ Yet, the 93-year-old liver in our case, which had a hydatid cyst disease and went through the transplantation process, was still be able to sustain its viability in a younger woman. This liver sustained adequate function through an uneventful pregnancy, providing another example of the characteristic longevity of the liver.

In an analysis performed by Coscia et al consisting of 213 pregnancies that resulted in 217 births, pregnancy in the liver transplant patients was not associated with any problems for the fetus or for the transplanted liver graft.¹¹ Although the incidence of preeclampsia, anemia, preterm delivery, and cesarean section were increased in these high-risk pregnancies, the rates of acute rejection, graft loss, and pregnancy-related maternal death were not increased.¹² Our case did not present any gestation-related comorbidity such as gestational diabetes, hypertension, liver graft rejection attacks, or preeclampsia during her pregnancy.

These results demonstrated that the liver can maintain its physical and functional capacity for much longer due to its magnificent capacity for longevity.

Declaration of Conflicting Interests

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