Donor experience and outcome of pediatric living-related liver transplantation in Saudi Arabia

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Abstract

Background/Purpose. The purpose of this article is to present the first series of living donation of liver grafts in Saudi Arabia, as well as in the Arab World, and to report the morbidity and mortality of the living donors after such procedures. Methods. A retrospective review of the medical charts of 37 living donors who were involved in the procedure of living-related liver transplantation (LRLT), that took place in Riyadh Armed forces Hospital in the period between November 1998 and July 2002, is conducted. Results. The age of living donors ranged between 21 and 41 years, and there were 22 women and 15 men. All donors are first-degree relatives, apart from 2 donors who were the cousins of the recipients. There was no mortality among the donors. The morbidity was minimal, including 3 cases of biliary leakage and 1 of incisional hernia. Of 39 pediatric liver transplantations that have been done over the above period, only 2 cases had cadaveric liver transplantation and these were excluded from this study. All donors had left lateral segment donation, apart from one who had right lobe, segments V–VIII donation to a 14-year-old recipient. Conclusion. Living donation of hepatic graft is a safe procedure for the donors with an excellent outcome. Living-related liver transplantation is the optimal treatment for end-stage liver disease and the solution for the scarcity of cadaveric liver grafts. The level of acceptance of living donation of hepatic grafts among the Saudi people is favorable.

Key words Living-related liver transplantation · Children

Introduction

The procedure of living donation of hepatic graft for liver transplantation, in the history of organ transplantation, has been delayed as compared to that of renal graft. This is due to the presence of two separate paired kidneys as opposed to a single organ, the liver. The concept of living-related liver transplantation (LRLT) has finally evolved into reality, but this was only made possible by the recent advances in hepatic surgery: the improved understanding of liver anatomy, the very remote operative risks of partial hepatectomy in noncirrhotic patients, and the widespread success with reduced size and split liver transplantation.1–3 The scarcity of cadaveric liver grafts puts a lot of pressure on these developments in the specialty of liver transplantation.

Smith proposed the operation of LRLT as a theory in 1969.4 It was Raia et al. in Brazil, in 1988, who performed the first LRLT. The operation was technically successful, but the recipient died of a fatal transfusion reaction.5 Subsequently in Australia, Strong et al.6 reported a successful case of liver transplantation in a child by using the left lobe of the mother’s liver. However, the first center with a background of extensive experience in liver transplantation and reduced size liver transplantation to establish a fully structured LRLT program was the University of Chicago.

In November 1998, the program of pediatric LRLT started in Riyadh, Saudi Arabia. The first successful case was done for a child of 4 years old with biliary atresia in which the mother was the donor.7 In this paper, we present the outcome of the living donations procedure for 37 living donors. We also discuss the expectation and the acceptance of living donation in our series.

Subjects and methods

Between November 1998 and July 2002, out of 39 pediatric liver transplantations that were done in Riyadh Armed Forces Hospital, 37 cases were LRLT and only 2 were cadaveric liver transplantation (CLT). A retro-
spective review of the medical charts of 37 living donors was done. Demographic, preoperative, operative, and postoperative data are included.

Living donation was suggested for all the families of patients who were listed for liver transplantation. Not unusually, there was more than one potential donor for each recipient who agreed to living donation. The closest potential donor was selected first. Each donor was assessed thoroughly following the protocol of the evaluation of living-related donor for liver transplantation (see Fig. 1). The surgeon and the pediatrician, to whom the first consent from the donor was taken, usually interviewed the donor. The donor then went through a step-1 evaluation procedure, which included basic laboratory investigations (e.g., blood group, full blood count, liver function tests, renal functions, etc.), ultrasound of the abdomen, and chest X-ray. If the donor had a compatible blood group with the recipient and normal investigation, he results or she then proceeded to step 2 which involves radiological assessment, computed tomography (CT) scan of the abdomen with volumetric measurement of the left lateral segments, cardiac assessment, psychological and social assessment, respiratory system evaluation, and a second group of laboratory tests (e.g., human leukocyte antigen (HLA) typing and cross-matching, viral screening, etc.). Once the donor was found to be fit for donation and the volume of the left lateral segment is suitable for the recipient, step 3 of the evaluation was done. This included liver biopsy to evaluate the degree of steatosis, which was done only with donors who showed evidence of steatosis by ultrasound or CT scan of the abdomen, and celiac angiography used at the outset of the program and later replaced by magnetic resonance angiography. Finally, step 4 included anesthesia assessment, final consent, and autonomous blood donation. The final step was to prepare the patient for the operation and to get a second informed consent, as well as to obtain autologous blood donation.

The donor operative procedure was started by Mercedes incision, mobilization of left lateral segments, and isolation of the left hepatic artery (LHA), left portal vein (LPV), and left hepatic vein (LHV). Then transection of the parenchyma was performed,