

ORIGINAL ARTICLE

THE FIRST REPORT OF LIVER TRANSPLANTATION IN IRAN

Seyed-Ali Malek-Hosseini MD*, Heshmatollah Salahi MD, Masoud Lahsai MD, Ali Bahador MD, Kamran Bagheri-Lankarani MD, Mohammad-Reza Fattahi MD, Mohammad-Hadi Imanieh MD, Mehdi Saber-Firoozi MD, Najaf Dehbashi MD, Mohammad-Mehdi Arasteh MD, Mohammad-Hadi Bagheri MD, Bita Geramizadeh MD, Arsha Karbassi MD

Department of Organ Transplantation, Shiraz University of Medical Sciences, Shiraz, Iran

Background – Liver failure and its complications are among the gravest diseases, and are relatively common in Iran. The only effective treatment for most of these patients is liver transplantation, which has only been available in Iran for 8 years. The aim of this study was to show that liver transplantation is feasible and affordable for patients in Iran.

Methods – Records of all patients from the Liver Transplantation Unit, Nemazee Hospital, Shiraz, Iran over the past 8 years were reviewed. Clinical data were analyzed focusing on the cause of liver disease, surgical techniques adopted, post-transplantation complications, and duration of early and late survival.

Results – During this period, 28 patients (19 males and nine females) received liver transplantation (mean age, 20.76 ± 12.37 yr; range, 4 – 48 yr). Twenty-one patients received organs from cadaver and seven from living-related donors. The most common cause of liver failure in adults receiving transplantation was cryptogenic cirrhosis, while the most common cause in children was biliary atresia. Early mortality (within 1 month after transplantation) including primary nonfunction of the graft occurred in seven patients. One patient died of duct syndrome 1 year after transplantation. The others were alive, healthy and active at the time of this report.

Conclusion – Liver transplantation has been performed in our center for the past 8 years with acceptable results and the success rate is improving.

Keywords • cadaveric liver transplantation • liver failure • liver transplantation • living-related liver transplantation (LRLT)

Introduction

Liver transplantation is the only effective treatment for most patients with liver failure. This procedure was not performed in Iran until 1993.¹

The first orthotopic liver transplantation in Iran was performed in Nemazee Hospital, Shiraz, on May 4, 1993. Since that time, we have witnessed many changes. Living-related liver transplantation (LRLT) and distant organ harvesting have improved patient care and, with augmented surgical techniques, we have seen a steady

improvement in patient survival.² Here, we report our experience on liver transplantation over the past 8 years.

Patients and Methods

Records of all patients who received liver transplantation at the Liver Transplantation Unit, Nemazee Hospital, Shiraz, Iran were reviewed. Data on age, sex, indication for transplantation, pre-transplant laboratory data, technique, post-transplantation course and survival both early (within 1 month) and late were gathered. Clinical data of donors were also reviewed. Data are presented as mean \pm SD and pie and bar charts.

* Correspondence: S. A. Malek-Hosseini MD, Organ Transplantation Unit, Nemazee Hospital, Shiraz, Iran. Fax: +98-711-6263054, E-mail: transpln@sums.ac.ir.

Liver Transplantation in Iran

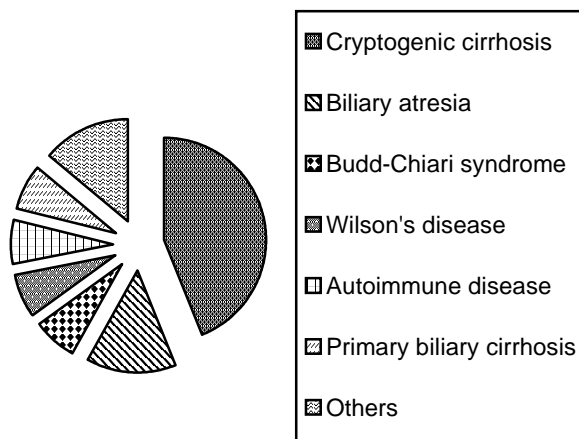


Figure 1. Underlying diseases in patients requiring liver transplantation.

Results

During this period, 28 liver transplants (19 males and nine females) were performed. Recipients were selected based on established indications for liver transplantation. Once the liver transplant team admitted the patients, they were registered on a waiting list. The cadaver-donated organs were offered by the Trauma Center of Nemazee Hospital, Shiraz, and other hospitals in the country. Cadaveric livers were harvested and then transferred to this center. LRLT recipients and donors were selected by an audit committee. The mean \pm SD age of patients was 20.8 ± 12.8 years (range, 4 – 48 yr). Twenty-one patients received cadaveric transplant, while seven received LRLT. The most common indication for transplantation in adults was cryptogenic cirrhosis (43%), followed by Wilson's disease and autoimmune hepatitis (26%). In children, biliary atresia was the most common indication for transplantation (Figure 1). The piggy-back technique was performed in 17 patients, a veno-venous bypass pump in four, and arterial-jump graft in one. Duct-to-duct (15 cases) and Rouxen Y (13 cases) techniques were used for biliary anastomosis. T-tube or stent was only used in the first nine patients. Mean intensive care unit (ICU) stay was 11 days in first 7 years of this transplantation service, but has dropped to 7 days in the past year. The problem of blood loss has also dropped over the years, mainly due to improved surgical techniques and administration of appropriate clotting factors. Baseline immunosuppression consisted of institution of a triple

regimen, which included steroids, azathioprine and cyclosporine. Acute rejection was managed with an intravenous bolus of methyl-prednisolone.

Early death (within 1 month) occurred in seven patients mainly due to sepsis, two of which were due to mucormycosis. The transplanted organs of the latter two were harvested by another team and then sent to Nemazee Hospital for transplantation. There was one case of primary nonfunction (PNF). One patient expired 1 year after transplantation due to vanishing bile duct (VBD) syndrome. Biliary complications were observed in only two patients. Nineteen patients (68%) survived with normal functioning liver. They returned back to normal life to carry out their daily activities (Figure 2).

Discussion

The first orthotopic liver transplantation was performed in 1967 by Starzl et al.³ Shortly thereafter, Calne et al also began to perform orthotopic liver transplantations.^{4,5} These two pioneering teams were followed by many other clinicians. Liver transplantation is the treatment of choice for most end-stage liver diseases and liver failure.^{6,7}

End-stage liver disease is relatively common in Iran. Today, more than 440 patients are on a waiting list for liver transplantation in our unit in Nemazee Hospital. Only few Iranian patients have been transplanted abroad due to the relatively high cost of this procedure and relatively long recovery time needed.

Our establishment is the first liver transplantation team in Iran and, since 1993, we have performed 21 orthotopic liver transplantations. The major obstacle in our work was the unavailability of cadavers. In the past 3 years, with the

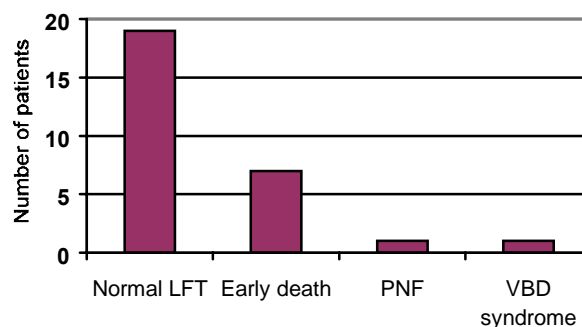


Figure 2. Liver transplant outcomes in 28 patients. LFT = liver function of transplanted; PNF = primary nonfunction; VBD = vanishing bile duct.

acceptance of brain death as a legal sign of death in Iran, we have had more potential donors and thus could perform more liver transplantation.

The survival rate of our series, which was 68%, is comparable with the results of other international liver transplant centers who have reported 1 and 10 years graft survival rates among adults and children to be 79% and 51%; and 76% and 63%, respectively.⁸

The main cause of chronic liver disease in Iran is hepatitis B infection which is reported to cause at least 70% of these cases, either alone or accompanied by other etiologies.⁹ Until now, we have only performed liver transplantation in one patient with HBV-induced liver cirrhosis. With the advent of the new antiretroviral treatment, we are now planning to perform more liver transplantations in this patient group.^{7,8}

Our series show that, despite many obstacles, we have achieved considerable success in both cadaveric and living-related transplants. The process of patient selection has improved, and now, preoperative management is a fixed part of the patient management program. Also, refinements in intraoperative and postoperative management have changed the surgical protocol of liver transplantation into a routine one, and we have overcome the fear and excitement that everyone felt in the first days of liver transplantation at our hospital. The possibility of performing LRLT, establishing distant organ procurement, and obtaining legal permission from the Iranian Parliament to use cadaveric organs could help us to mitigate the problems related to the lack of adequate donors.

In conclusion, liver transplantation is now performed on a regular basis at our center, and further experience would improve survival and quality of life of the transplant patients. In order to

reduce the complication rate, it would be a good idea to harvest and form liver transplantation banks so that livers donated for transplantation are kept in the same hospital where the transplantation is planned to be performed.

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