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H. Lidén
J. Norrby
S. Friman
M. Olausson

Liver transplantation for primary sclerosing cholangitis – a single-center experience

H. Lidén · J. Norrby · S. Friman · M. Olausson (✉)
Department of Transplantation and Liver Surgery, Sahlgrenska University Hospital, S-413 45 Gothenburg, Sweden
Tel.: + 46-31-3422441
Fax: + 46-31-410551

Abstract The purpose of this study was to analyze the outcome of liver transplantation for primary sclerosing cholangitis (PSC) at our center. The medical records of 47 consecutive patients transplanted during the period 1985–1996 were reviewed. Actuarial patient survival was determined at 1, 5, and 10 years. Data on reasons for retransplantation, incidental carcinoma, biliary complications that required surgical intervention, and signs of possible disease recurrence were collected. The median follow-up period was 3.6 years. Overall patient survival was 75% at 1 year and 66% at 5 and 10 years. Patients transplanted during the period 1994–1996 ($n = 24$) had a significantly ($P < 0.02$) better 1 year (88% vs 61%) and 5-year (83% vs 48%) survival than patients transplanted during the period 1985–1993 ($n = 23$). Six patients (13%) were retransplanted, and 4 are currently alive. Nine patients (19%) had biliary complications that required surgical intervention. Cholangiocellular carcinoma was found in 4 (9%) explanted livers, and all 4 patients succumbed within 2 years of transplantation. Indications of disease recurrence were seen in 4 patients (9%). In conclusion, the results of liver transplantation for PSC at our center are comparable to those of other benign indications, but a relatively high incidence of biliary complications was noted, and a possible disease recurrence was detected in 9% of patients.

Key words Liver transplantation · Primary sclerosing cholangitis · Disease recurrence · Biliary complications

Introduction

Primary sclerosing cholangitis (PSC) is one of the major indications for liver transplantation in Scandinavia. During the period 1985–1996, 313 liver transplantations were performed at our center. PSC patients received 18% of these grafts. PSC is predominantly a disease of men and is often associated with inflammatory bowel disease (approximately 70%). There is an increased risk of developing cholangiocellular carcinoma that significantly affects the outcome [2, 6]. Medical and surgical therapies for PSC are limited, and the natural course of PSC is hard to predict, but it has been established that carefully selected patients benefit from orthotopic liver transplantation (OLT) [1, 4]. After transplantation, the possibility of recurrence of PSC has been debated [5]. It has been argued that the pathological findings that suggest recurrence are indistinguishable from other events such as chronic rejection and bile duct damage due to poor arterial blood flow [3].

The aim of this study was to analyze the outcome of liver transplantations for PSC at our center, review vascular and biliary complications, and identify possible disease recurrence.

Patients and methods

The study population consisted of all 47 patients transplanted during the period 1985–1996 for PSC. We have retrospectively reviewed their medical records and collected data on biliary complications, vascular complications, reason for retransplantation, indicators of recurrent disease, and survival. Indicators of recurrent disease were histology and biliary strictures on cholangiogram. Kaplan-Meier survival with Cox-Mantel log-rank tests were performed on patients transplanted during 1985–1993 vs 1994–1996.

Results

During the study period 47 patients were liver-transplanted for PSC. Mean age at transplantation was 43 years (range 11–70 years), and the female/male ratio was 18/29. Mean and median follow-up was 5.6 and 3.6 years, respectively (range 2.5–12.7 years).

Overall patient survival was 74.5% at 1 year and 65.9% at 5 and 10 years. Patients transplanted during the period 1994–1996 ($n = 24$) had a significantly ($P < 0.02$) better 1-year (87.5% vs 60.9%) and 5-year (83.3% vs 47.8%) actuarial patient survival compared to those transplanted during the period 1985–1993 ($n = 23$) (Fig. 1).

Six patients were retransplanted (2 due to artery thrombosis, 1 to primary graft non-function, and 3 to late graft dysfunction). Two of these patients were re-retransplanted due to primary graft non-function. Four of the retransplanted patients are currently alive. Artery thrombosis was seen in 3 cases and necessitated 2 retransplantations. All three patients are currently alive. Two patients developed portal thrombosis, both resulting in patient death. Biliary complications that required intervention were seen in 9 patients (19%). Four patients needed open surgical intervention. Anastomotic and non-anastomotic bile duct strictures were stented in 5 cases. Indications of recurrent disease (histology and cholangiogram) developed in 4 patients (9%) after 1.5–6 years. The hepatic artery was patent in all 4 patients. None of these have been retransplanted for recurrent disease and are currently alive. Cholangiocellular carcinoma was found in 4 explanted livers, and all 4 recipients are dead. Two died in the early postoperative period (one of portal thrombosis and one of multiple organ failure). Two succumbed to disseminated cancer 10 and 16 months after transplantation.

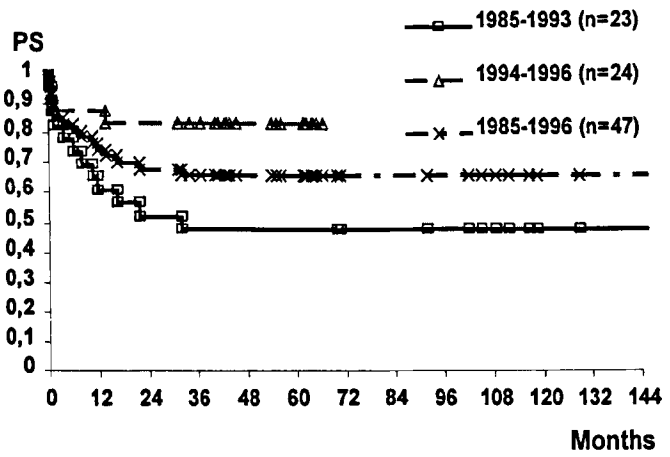

Fig. 1 Survival of patients following liver transplantation for primary sclerosing cholangitis

Discussion

The results of liver transplantation for PSC are comparable to those of other benign indications for liver transplantation at our center. Since the start of our programme 14 years ago, results have improved and are comparable to those of other centers [1, 4–6]. The improvement could be explained by a learning curve and also by the fact that PSC patients were transplanted at more advanced stages of the disease in the early era. Biliary complications that required intervention were seen in 19% of cases. One of them was a patient who originally had a duct-to-duct anastomosis but had to have it converted to a Roux-en-Y after 6 years. The rate of biliary complications is comparable to those reported from other centers [6].

Cholangiocarcinoma undetectable before transplantation was found in 4 explanted livers and resulted in patient death due to disseminated disease within 16 months in 2 patients. The other 2 patients were lost in the early postoperative period because of multiple organ failure and portal thrombosis. The timing of transplantation is crucial as the outcome is severely affected by the presence of cholangiocarcinoma at the time of transplantation [7]. During the study period, 7 patients were found to have cholangiocarcinoma with extrahepatic growth at the time of transplantation and were subsequently not transplanted. If these patients are included in the material, the resultant figure of prevalence of cholangiocarcinoma in patients with PSC who were accepted for transplantation was 20% (11/54).

A cause of concern is the signs of late disease recurrence, which may be as high as 9% in our material. The possibility of recurrent disease is controversial [3], but we have seen both histology and cholangiogram results in 4 patients with patent arterial blood-flow that show signs of recurrent disease. This has also been reported from other centers [5].

In conclusion, patients with end-stage liver disease due to PSC can be offered an effective treatment with liver transplantation with results comparable to those

of other benign indications. Timing is crucial as a biliary malignancy discovered at the time of transplantation worsens the outcome.

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