



Survival Outcome After Hepatic Replantation for Hepatitis C Virus–Positive and –Negative Recipients

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ABSTRACT

Introduction. Hepatitis C virus (HCV)–related liver disease is the most common indication for liver transplantation in the United States. Recurrence of HCV infection in these recipients is almost uniform. The currently available antiviral treatment is known to cause significant side effects, and the rate of sustained viral response is low. There is still controversy about whether such patients should undergo subsequent transplantations for HCV disease. This study compared outcomes for hepatic retransplantation performed in HCV(+) and HCV(–) recipients at a single center.

Patients and methods. From December 1994 through November 2003, 68 patients at our institution received a second liver allograft. Nineteen of the recipients were HCV(+) (group A) and 49 were HCV(–) (group B). All patients were followed until January 2004. The mean follow-up time after initial retransplantation was 37 ± 29 months. Patient and graft survival for the two groups were compared.

Results. Seven recipients in group A (36.8%) and 22 recipients in group B (44.9%) died during follow-up. The actuarial 3-year patient survival after initial retransplantation for groups A and B were 61.7% and 51.6%, respectively. Nine patients required a second retransplantation, 3 (15.8%) in group A and 6 (12.2%) in group B. The actuarial 3-year graft survival from initial retransplantation for groups A and B were 56.3% and 45.7%, respectively.

Conclusion. We observed slightly better patient and graft survivals at 3 years from initial retransplantation in HCV(+) recipients compared to HCV(–) recipients. This may be due to younger donor age and better selection of HCV(+) recipients in this series.

CURRENTLY, MORE THAN 40% of all liver transplantation (LTx) in the United States is done for hepatitis C virus (HCV)–related liver disease and it is the most common indication for LTx.¹ Long-term results of liver transplant in HCV(+) recipients are significantly poorer in terms of patient and graft survivals than the overall results of LTx.^{2,3} Survival after retransplantation in HCV(+) recipients may also be lower than for HCV(–) patients. However, when a primary allograft fails, retransplantation is the only option for survival. It has been suggested that early retransplantation with a lower MELD (Model for End-stage Liver Disease) score in HCV recipients leads to better outcome.^{3–8}

Our aim in this study was to compare patient and graft survivals after first retransplantation in HCV(+) recipients and HCV(–) recipients.

PATIENTS AND METHODS

From December 1994 through November 2003, 68 patients at our institution received a second liver allograft. All these recipients were followed until January 2004, and the mean follow-up time after retransplantation was 37 ± 29 months. The recipients were divided into two groups based on HCV-RNA status (group A: HCV[+]; group B: HCV[–]), and patient and graft survival rates were compared.

Data are presented as mean \pm standard deviation. Actuarial survival were calculated using the Kaplan-Meier formula, and

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Table 1. Demographics and Results After Retransplantation in HCV(+) and HCV(-) Recipients

	Group A, HCV(+)	Group B, HCV(-)
Indications for retransplantation		
Hepatic artery thrombosis	6	27
Primary nonfunction	5	13
HCV in graft	6	0
Other causes	2	9
Total	19	49
Mean MELD score	28.9 ± 13.4	29.8 ± 11.0
Mean donor age (y)	31.8 ± 13.6	42.8 ± 15.1*
Causes of death		
Sepsis	4	15
Metastatic Ca	2	1
Cardiac arrest	1	1
Status epilepticus	0	1
MVA	0	1
Aspergillosis	0	1
CMV	0	1
MSOF	0	1
Total	7 (37%)	22 (44%)
Reason for third transplantation		
Hepatic artery thrombosis	2	2
Biliary cast syndrome	0	4
HCV in graft	1	0
Total	3 (15.7%)	6 (12.2%)

HCV, hepatitis C virus; MELD, Model for End-stage Liver Disease; Ca, carcinoma; MVA, motor vehicle accident; CMV, cytomegalovirus virus; MSOF, multisystem organ failure.

*Difference between groups is statistically significant.

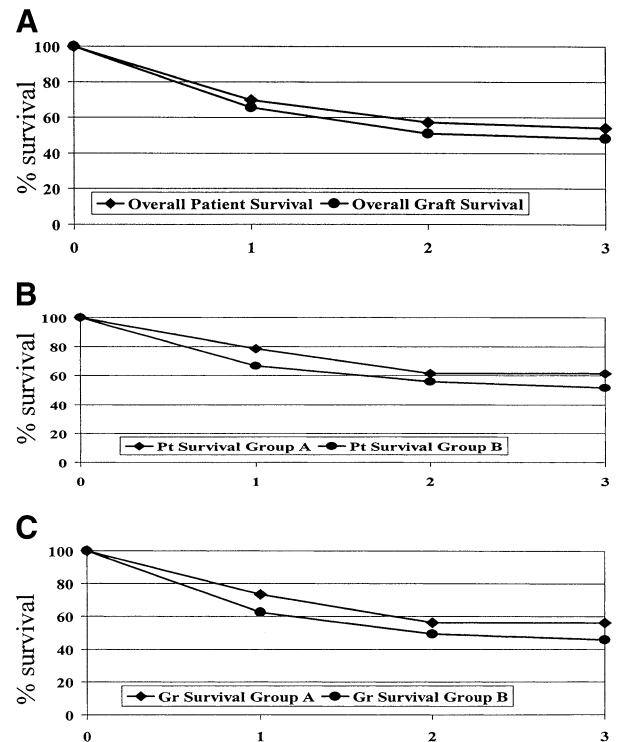
differences in survival among the two groups were compared using the log-rank formula. The differences in the mean MELD scores and mean donor age were compared using Student *t* test. The software package SPSS for Windows version 11.5 was used to make all calculations.

RESULTS

Nineteen patients were HCV(+) (group A) and 49 patients were HCV(-) (group B) at the time of first retransplantation. Group A comprised 17 men and two women of mean age 45 ± 6.5 years, and group B comprised 21 men and 18 women of mean age 49 ± 9.7 years. Table 1 lists the indications for first retransplantation, mean MELD score at the time of retransplantation, and mean donor age for both groups. The mean MELD scores of recipients in group A and group B were 28.9 ± 13.4 and 29.8 ± 11.0, respectively, but the difference was not statistically significant (*P* = .75). The mean donor ages for recipients in group A and group B were 31.8 ± 13.6 and 42.8 ± 15.1 and this difference was statistically significant (*P* = .006).

Patient Survival

Seven group A patients (36.8%) and 22 group B patients (44.9%) died during follow-up. The causes of death in both groups are listed in Table 1. The overall 3-year patient survival was 54.1% (Fig 1A), and those for groups A and B were 61.7% and 51.6%, respectively (Fig 1B). Thus, patient



Post year retransplantation

Fig 1. Patient and graft survival statistics after retransplantation in HCV(+) and HCV(-) recipients. (A) Overall patient and graft survival after retransplantation. (B) Patient survival for groups A and B. (C) Graft survival for groups A and B.

survival was better in group A recipients, but the difference between the two groups was not statistically significant (*P* = .42).

Graft Survival

Nine patients required a second retransplantation, 3 (15.8%) in group A and 6 (12.2%) in group B. The reasons for second retransplantation were hepatic artery thrombosis (*n* = 4), biliary cast syndrome (*n* = 4), and recurrence of HCV (*n* = 1) (breakdown by group in Table 1). The overall 3-year actuarial graft survival from initial retransplantation was 48.3% (Fig 1A), and those for groups A and B were 56.3% and 45.7%, respectively (Fig 1C). The difference in graft survival between the two groups was not statistically significant (*P* = .88).

DISCUSSION

Recipients of LTx for HCV-related liver disease who do not respond to treatment develop recurrence of HCV followed by cirrhosis. Retransplantation in these recipients remains a controversial issue due to severe organ shortage. Reports from several transplant centers document lower success rates in HCV(+) retransplantation for a variety of reasons.³⁻⁸

Sheiner et al⁶ suggested that HCV(+) patients should undergo early retransplantation, before infectious complications and renal dysfunction occur. Burton and coworkers⁴ have recommended retransplantation in HCV(+) patients with a lower MELD score. Other authors have documented poor outcomes in HCV(+) recipients who undergo retransplantation with grafts from older donors.^{9,10}

In our series, the overall mean MELD score was 29 and mean donor age was 32 years. The details of individual groups are tabulated in Table 1. We believe that careful selection of recipients and donor is mandatory for optimal survival and better outcome in retransplant of HCV(+) recipients.

In conclusion, contrary to general belief and to other results in the literature, observed slightly better patient survival in HCV-positive recipients compared to HCV-negative recipients. However, the difference was not statistically significant. The observed difference may be due to careful selection of patients and also younger donor grafts used in HCV-positive patients.

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