Survival after liver transplantation for hepatitis C is unchanged over two decades in Canada

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Allograft failure secondary to recurrence of hepatitis C virus (HCV) infection is the most common cause of death and retransplantation among recipients with HCV infection. It has been suggested that patients transplanted for HCV have had worse outcomes in more recent years than in previous years (the ‘era effect’). A Canadian transplantation registry database was analyzed to determine the outcomes of patients transplanted over the years for HCV. The results of the present analysis of 1002 patients show that the ‘era effect’ was not seen in liver transplantation recipients with HCV in Canada, because no survival difference was noted based on the year of transplantation. All groups had overall two-year and five-year survival rates of 76% to 83% and 69% to 72%, respectively. The present study’s national results prove continued benefit to transplantation of HCV patients.

Key Words: Era effect; Hepatitis C; Survival; Transplantation

Recurrent hepatitis C virus (HCV) infection is an Achilles’ heel of liver transplantation. Allograft failure secondary to recurrence of HCV is the most common cause of death and retransplantation among recipients with HCV infection. Often quoted throughout the medical literature is the increased fibrosis progression, as well as worse post-transplant graft and patient survival, of HCV patients who were transplanted in more recent years (often referred to as the ‘era effect’ or ‘Berenguer effect’, for the data published by Berenguer et al in 2000 and 2002 [1,2]). Efforts to discern causes for these worse outcomes has led to considerable change to immunosuppression regimens and, potentially, organ allocation in these patients. This, among other data, has also led to concern and speculation on the utility of transplantation in these individuals. Until recently, it was unclear whether this ‘era effect’ was reproducible in other centres or other countries. In the past few months, an analysis of the United Network of Organ Sharing suggested unchanged survival over the years for HCV patients post-transplant but improved survival for non-HCV patients over the same time frame (3). We have analyzed a Canadian transplantation registry database (4) to determine the outcomes of patients transplanted over the years for HCV.

METHODS

The Canadian Transplant Hepatology Outcomes Research Network performed an evaluation of the national liver transplant registry database. One thousand two patients who were transplanted for HCV-related diseases over 16 years were analyzed. To ensure accurate results, all transplantation centres in Canada...
RESULTS

One thousand two HCV-positive patients were analyzed for outcomes. These patients represented all patients transplanted for HCV in Canada. There was no survival difference for the cohort of HCV patients based on year of transplantation (Figure 1). The two- and five-year survival rates were similar in all groups analyzed. The one-year survival rate of patients who underwent transplantation between 1990 and 1993, 1994 and 1997, 1998 and 2001, and 2002 and 2004 were analyzed. Kaplan-Meier survival curves were generated (Figure 1). Because of the database restrictions, categorizing for cause of death was not possible.

TABLE 1
Kaplan-Meier estimates of the one-year survival rates of liver transplantation patients with the hepatitis C virus (HCV) compared with patients in the general transplant population

<table>
<thead>
<tr>
<th>Time frame</th>
<th>General population</th>
<th>HCV patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990 to 1993</td>
<td>79.5</td>
<td>77.9</td>
</tr>
<tr>
<td>1994 to 1997</td>
<td>85.3</td>
<td>85.4</td>
</tr>
<tr>
<td>1998 to 2001</td>
<td>86.4</td>
<td>86.5</td>
</tr>
<tr>
<td>2002 to 2004</td>
<td>89.0</td>
<td>85.1</td>
</tr>
</tbody>
</table>

Log-rank test P value <0.0001 (P=0.0812)

DISCUSSION

The results of our analysis of 1002 patients show that the ‘era effect’ was not seen in liver transplant recipients in Canada. Thus, we were unable to confirm previously published data of worsening outcomes for patients transplanted for HCV over time. It is likely that the absence of the ‘era effect’ in Canada is related to a number of factors, including an absence of change in donor age in Canada over the years (4). A recently published analysis of the United Network of Organ Sharing database also suggested no difference in patient survival over time in HCV patients. They also noted no improvement in HCV patient survival over the years, which was in contrast to the improvement in the survival of non-HCV patients who were transplanted during the same time intervals (3). We found a similar result when comparing one-year survival of HCV patients over two decades with that of the general transplant population.

The finding of similar outcomes does not negate the ongoing problem of recurrent HCV and progressive liver disease and dysfunction related to the virus, nor does it address the issue of more rapid fibrosis over these same years. The present paper simply supports the concept that published data may not be transferable among programs and countries. Our national results do prove a continued benefit of transplantation in these patients, because the outcomes are quite good (five-year post-transplant survival rate, higher than 70%). It remains unclear whether this patient population would benefit from different immunosuppression protocols or organ allocation policies, but those decisions should not be based on presumed worse outcomes in recent years.

REFERENCES
