Expanding the Donor Pool for Liver Transplants: A 2014 Summary

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Abstract

There has been a large gap between the number of patients awaiting liver transplants and those receiving them. In the East, living-donor liver transplant has become the major source of grafts, whereas in the West, deceased-donor grafts have been the major source for liver transplants. Some newly developed or developing donor types are discussed.

Key words: Donor pool, Extended criteria donors, Donation after cardiac death, HIV donors, Facebook phenomenon

Introduction

For the last 20 years, orthotopic liver transplant has become a therapy for treating end-stage liver diseases. The demand for liver transplant has increased rapidly, creating a large gap between the number of patients awaiting liver transplants and those receiving them. In Eastern countries, living-donor liver transplant has become the sole source of grafts, but in Western countries, deceased-donor grafts have been the only source for liver transplant. In April 2013, the United Network of Organ Sharing reported that 15,854 patients were awaiting liver transplant in the United States. In 2012, there were 6,256 liver transplants performed in the United States including 6,010 deceased-donor and 246 living-donor liver transplants (Figure 1). From 2000 to 2005, the number of living-donor liver transplants performed in United States decreased because of 3 reported donor deaths and donor risk 0.5%.

The alternatives introduced into the regular practice of liver transplants include:

Extended criteria donors: These are donors who have donor age > 55 years, donor hospital stay > 5 days, cold ischemia time > 10 hours, and warm ischemia > 40 minutes. The use of allografts from extended criteria donors to appropriate recipients has been used for acceptable transplant outcomes, as an alternative to higher waitlist mortality. An extended criteria donor score ≤ 2 is associated with acceptable outcomes.1-5

Donation after cardiac death: These donors have been known previously as non–heart-beating donors. Care in the operating room is withdrawn after adequate consent is obtained from the family. Donation after cardiac death differs from donation from brain death donors. With donation after cardiac death, 5 minutes must pass after extubation from the respirator before death can be declared. Warm ischemia time until removal of the organs should be

Figure 1. Liver Transplant Waitlist and Procedures in the United States*
system viral infections that should be identified in the donor. West Nile virus is important, and donor cause of death should be considered before organ procurement. A careful match between the donor and the recipient is critical for this operation.

**Advanced donor age:** Advanced age significantly decreases patient and graft survival in recipients with hepatitis C virus infection. If the allograft is suitable, advanced age donation may be appropriate in matched recipients. It is recommended that recipients who have hepatitis C virus infection are matched to an organ from a donor aged < 55 years.

**ABO incompatibility:** These grafts are not recommended except in emergency situations for pediatric recipients. Grafts from donors having blood type A₂ can be given to type O recipients.

**Steatosis:** Donors who have low or moderate steatosis can be considered for donor grafts, and donor liver biopsies are encouraged.

**Anti-hepatitis B core antigen-positive donors:** These donors can be accepted for recipients who have not been exposed to hepatitis B and who receive hepatitis B immune globulin and antiviral prophylaxis.

**Malignancy:** Organs should not be used from people who have a history of malignancy outside of the central nervous system, but organs from people with previous central nervous system tumors may be acceptable.

**Hepatitis C virus-positive donors:** Allografts from hepatitis C virus-positive donors can be accepted for hepatitis C virus-positive recipients. Survival is comparable with the use of hepatitis C virus-negative allografts. Currently, determining donor genotype is not done in routine practice.

**Human immunodeficiency virus (HIV):** There is new literature that suggests that organs from HIV-positive donors can be accepted for HIV-positive recipients. In 2013, President Obama signed the law for HIV donations to be used for HIV-positive recipients.

**Infections:** Increased screening in endemic areas is important, and donor cause of death should be identified before organ procurement. West Nile virus and Rabies virus are important central nervous system viral infections that should be identified in the donor.

**Split liver transplant:** Splitting is associated with technical challenges, and not all allografts are appropriate for splitting. Success is much greater in specialized centers with appropriate recipient match. Biliary complications may be associated with certain preservation solutions, especially among DCD donations.

**Facebook phenomenon:** Since May 1, 2012, Facebook users have been able to share their organ donor status with friends, family, and the public, similar to the way they share other information. The information is part of the Web site’s new Timeline feature that asks users to share stories and photographs. Since launching this feature, the results of the Facebook organ donation initiative have been phenomenal. The number of registered donors in the United States increased 1183% in the first week, and donor registration remained increased 1 month later.

**References**