Kidney Transplantation from a Hepatitis C Virus-positive Donor to a Hepatitis C Virus-negative Recipient

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Abstract

Kidney transplantation from a hepatitis C virus (HCV)-positive donor to an HCV-negative recipient till recently has been a contraindication. In view of the excellent sustained virological response (SVR) rates with directly acting antiviral agents, HCV-positive donors are being considered for the HCV-negative recipients in a few centers. We report the successful transplantation of an HCV-negative recipient transplanted with an HCV-positive donor kidney. Donor was treated with sofosbuvir and ribavirin for 12 weeks. At 10th and 16th weeks of starting treatment, her HCV-RNA PCR was negative. Three weeks later, transplantation was performed with basiliximab induction and triple immunosuppression with tacrolimus, mycophenolate, and prednisolone. The recipient was administered sofosbuvir and ribavirin for 12 weeks. He attained good graft function with a stable creatinine. His serial alanine transaminases were normal on 3rd, 6th, and 12th months, respectively. Six months posttransplant his anti-HCV antibody, and HCV-RNA PCR were negative.

Keywords: *Donor, hepatitis C infection, kidney transplantation*

Introduction

Patients with CKD stage V in need of a transplant were till recently deemed ineligible or at high risk to receive a hepatitis C virus (HCV)-positive donor's kidney.[1] With the advent of directly acting antiviral agents (DAAs), the rates of sustained virological response (SVR) in HCV, with treatment are as high as 96%–98%.[2,3] With the current scenario of long waiting lists for a cadaveric transplant and the subsequent high mortality of patients waiting on dialysis as compared to transplant recipients;[4] there has been a continuous endeavor by transplant physicians across the world to increase the usable donor pool, such as marginal donor kidneys.[5] Now in a few centers across the world HCV-positive donors are being considered for HCV-negative recipients, in view of the excellent SVR rates with DAAs.[6,7] Here, we report the successful prevention of transmission of HCV in transplantation of an HCV-negative recipient transplanted with an HCV-positive donor kidney.

Case Report

A 49-year-old (A+), male, CKD stage V due to Type II diabetes, with diabetic nephropathy, on hemodialysis since May 2015 presented to us with the desire for kidney transplantation. His 38-year-old wife (A+) came forward as his donor. The evaluation revealed optimal donor status and haplomatched, except that she was found to be anti-HCV+. Her liver enzymes were normal (alanine transaminase [ALT] 28 U/L). HCV-RNA PCR was 1,747,714 IU/ml, genotype 1A. As no other donor was available and faced with a long cadaver waiting list, they requested acceptance of the wife as a donor. They were counseled regarding the problems associated with the endeavor, and after due consent, the wife was considered as a donor. She was started on sofosbuvir 400 mg once a day and weight-based ribavirin for 12 weeks. At 10th and 16th weeks of starting treatment, her HCV-RNA PCRs were negative. Three weeks after completion, transplantation was performed with basiliximab induction and triple immunosuppression with tacrolimus, mycophenolate, and prednisolone. He was also started on sofosbuvir and ribavirin

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1 week pretransplant for 12 weeks. He attained good graft function and reached a stable creatinine of 1.0 mg/dL at 3rd, 1.1 mg/dL at 6th, and 1.1 mg/dL at 12th month. His serial ALTs were 17, 25, and 18 U/L on 3rd, 6th, and 12th months, respectively. After 6-month posttransplant, his anti-HCV antibody and HCV RNA PCR were negative.

Discussion

In the past, if transmission to recipient occurred during kidney transplantation, treatment was not possible because of the high risk of rejection with interferon-based regimens, which was only available effective treatment. However, with the advent of DAAS leading to >95% cure rates and the ease of treating HCV posttransplant,[8] donor kidneys from HCV-positive individuals into HCV-negative recipients are being actively pursued.[6,7] With these new agents, the current cure rates for HCV now exceed 95%. A recent report demonstrated high cure rates even in the liver transplant setting,[9] suggesting that immunosuppression does not impede eradication and that the interactions between HCV and transplant drugs can be successfully managed. Now, therefore transplant professionals are beginning to advocate the use of HCV infected donors for HCV-negative recipients. Counseling of donors as relating to the desirability of treatment of hepatitis C with DAA is necessary as the current regimens have excellent efficacy and substantially reduce the risk of long-term sequelae of hepatitis C infection such as cirrhosis and hepatocellular carcinoma. Although we do not as yet have definitive proof of lack of transmissibility of HCV based on large-scale controlled prospective clinical trials, the currently available data suggest an extremely low probability of transmission particularly where there has been adequate SVR. The theoretical possibility of reactivation of hepatitis C in the donor and its consequences is expected to be exceedingly low after treatment with current regimens of DAA, and almost never if SVR at 12 weeks been demonstrated.

Recently, a group in Barcelona reported transplantation of a live donor kidney from a donor, treated with DAA and achieved an SVR, to her spouse with no transmission of infection.[10] Another group from Japan reported a transplant from an HCV antibody positive, but RNA negative donor who had achieved SVR with interferon beta 12 years earlier, to an HCV-negative recipient.[11] Reese recently argued for regularly using HCV-positive kidneys irrespective of recipient viral status.[12] In the ongoing effort to expand the donor pool, two centers have evaluated the use of HCV + deceased donor kidneys for HCV-uninfected (HCV−) recipients with preemptive HCV treatment in pilot trials.[7,13] Unlike hepatitis B, HCV does not become integrated with host DNA, therefore, after SVR has been demonstrated the likelihood of any residual tissue reservoirs in transplanted organs has not been shown to be a possibility. Here, we report a case of an HCV-positive donor treated successfully with antiviral therapy who subsequently donated a kidney to an HCV-negative recipient without viral transmission. With the advent of DAAs and high cure rates; this is another step to expanding the donor pool.

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Conflicts of interest

There are no conflicts of interest.

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