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Prophylaxis and Treatment of Chagas Disease in Renal Transplant Donor and Recipient: Case Report

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ABSTRACT

Chagas disease is a prevalent zoonosis in Latin America, caused by the protozoa *Trypanosoma cruzi* and transmitted by *Triatoma infestans.* Part of the infectious cycle consists of chronic subclinical parasitemia, causing in the long term end-organ damage. Amastigotes have been isolated from various organs including native and allograft renal parenchyma; thus, transplantation plus immunosuppression therapy is another mode of disease transmission and reactivation. Herein, we report 2 successful kidney transplantations cases in which either infection or reactivation was averted using prophylactic nitroderivates.

CHAGAS DISEASE is a prevalent zoonosis in Latin America, found from Mexico to Argentina. It is caused by the protozoa *Trypanosoma cruzi* and transmitted by its vector, *Triatoma infestans,* an insect commonly found from southern California to central Argentina. Twelve million persons have been infected, and as many as 100 million are at risk of acquiring the disease.[1] Part of the infectious cycle consists of chronic subclinical parasitemia, causing in the long term end-organ damage such as myocardiopathy, megaesophagus, and megacolon.[2] Amastigotes that correspond to the intracellular form of the parasite have been isolated from the central nervous system, muscle, and blood, as well as native and allograft renal parenchyma.[3] There are case reports of recipients who have been infected by kidney allografts from a donor with a subclinical stage of the disease[4] and cases in which reactivation occurred in a previously infected recipient receiving immunosuppression therapy.[5] The diagnosis is based primarily on results of serologic studies such as indirect immunofluorescence (IIF), enzyme-linked immunosorbent assay (ELISA), or polymerase chain reaction (PCR). The PCR has reduced sensitivity primarily in patients with the chronic phase of the disease, in which parasitemia is greatly reduced and intermittent. However, serologic studies are still a valuable aid in diagnosis.[6] Various treatments have been proposed including use of allopurinol, fluconazole, benznidazole, and nifurtimox (5-nitrofurazone); The latter 2 nitroderivates are the agents of choice.[7] Herein, we report 2 cases; in one, the donor was a carrier of Chagas disease, and in the other, the recipient had the chronic phase of the disease.

CASE REPORTS

Case 1

A 32-year-old man with end-stage renal disease of unknown cause, who had been receiving dialysis the 3 years, underwent living-donor kidney transplantation on July 9, 2003. The donor was his brother. The patient's panel reactive antibody (PRA) score was 0%. Cross-match was negative. Recipient exhibited one mismatch to HLA-A, one mismatch to HLA-B and no mismatch to HLA-DR. Serologic test results in the donor were positive for Chagas disease at IIF and ELISA but negative at PCR. Serologic tests in the recipient yielded normal findings. To avert infection, the recipient received prophylaxis with 5-nitrofurazone, 120 mg 4 times a day, from day 1 to day 9 posttransplantation, followed by 180 mg 3 times a day until August 14, 2003. The donor received 5-nitrofurazone, 240 mg 3 times a day for 1 month, during January 2003. The donor PCR remained negative up to 3 months after completion of treatment, and serologic test results in the recipient were still normal at 6 years posttransplantation (Table 1).

Case 2

A 61-year-old man had end-stage renal disease of unknown cause and a history of chronic nonreplicative hepatitis B with Child-Pugh class A chronic liver disease. Pretransplantation serologic studies were positive for toxoplasmosis and Chagas disease at IIF and ELISA, and results of PCR were positive for Chagas disease. After extensive multidisciplinary evaluation, the patient underwent living-donor kidney transplantation on December 11, 2007. The donor was his sister. His PRA score was 26%. Cross-match was

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negative. Recipient exhibited no mismatch to HLA-A, one mismatch to HLA-B and one mismatch to HLA-DR. Because of the high PRA score, induction with monoclonal antibodies was used during surgery and on day 4. 5-Nitrofurazone, 240 mg 3 times a day, was given for 1 month before transplantation and was continued for 2 months after the procedure. The PCR remained negative at 7 months posttransplantation (Table 2).

DISCUSSION

We have reported 2 cases of successful renal transplantation in patients at high risk with either Chagas disease reactivation or infection. Although it has been reported that treatment with nitroderivates during the chronic latent phase of the disease is not so effective as during the acute phase to eradicate the microorganism,[7] it is possible with prophylaxis to avert transmission or reactivation in the recipient.[8] In our case 1, administration of 5-nitrofurazone in the infected donor with the chronic phase of low parasitemia, plus prophylaxis in the recipient, averted transmission of the parasite. In case 2, prolonged exposure to the drug in the previously infected recipient during the period of the most intense immunosuppression averted reactivation and resulted in negative findings at PCR. Considering the high demand for kidney allografts, adoption of such prophylactic methods, especially in endemic areas, may enable use of infected donor organs.

Table 1. Results of Serologic Tests and PCR in Donor and Recipient

	Test		
Test Date	ELISA	IIF IgG	PCR
Donor			
April 4, 2002		1/160	
May 31, 2002	Positive		
July 4, 2002		1/160	
October 10, 2002			Negative
March 21, 2003			Negative
June 18, 2009		1/80	Negative
Recipient			
April 4, 2002		Negative	
August 25, 2003	Negative		
September 9, 2003		Negative	
October 3, 2003	Negative		
January 5, 2004	Negative		
June 18, 2009		Negative	Negative

ELISA = enzyme-linked immunosorbent assay; IIF = indirect immunofluorescence; PCR = polymerase chain reaction.

Table 2. Results of Serologic Tests and PCR in Recipient

	Test		
Test Date	ELISA	IIF IgG	PCR
February 9, 2006	Positive		
February 28, 2006		1/1280	
August 18, 2006			Positive
August 17, 2007			Positive
August 30, 2007		1/320	
March 12, 2008			Negative
July 20, 2009			Negative

ELISA = enzyme-linked immunosorbent assay; IIF = indirect immunofluorescence; PCR = polymerase chain reaction.

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