TABLE 1. MES counts detected in 11 patients during cardiopulmonary bypass

Case	Age (y)	Sex	Bypass time (min)	MES counts				
				Before filter	After filter	Right MCA	Left MCA	Both MCAs
1	69	F	70	9258	6768	8	6	14
2	44	M	67	5458	3469	97	148	245
3	15	M	65	6569	4610	462	389	851
4	56	M	72	7933	4643	530	157	687
5	70	F	60	17,564	8091	160	126	286
6	73	M	75	4395	2363	23	29	52
7	60	M	68	1683	1323	12	24	36
8	66	M	79	5315	1868	73	54	127
9	49	F	64	8088	2678	28	52	80
10	78	M	55	26,230	18,458	31	15	46
11	72	F	110	7901	4861	102	98	200
Total								
Sum				100,394	59,132	1526	1098	2624
Median				7343	4588	85	81	163
95% Confidence interval				4927-15,132	2668-9890	26-279	29-197	52-452

refrained from further evaluating MESs detected during other operation stages. Our study thus can provide no information on the relation between MES counts and various stages of cardiac surgery or surgical manipulations, because the MESs detected in this study were not caused by surgical interventions but solely by the oxygenator.

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Should HIV-positive recipients undergo heart transplantation?

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Received for publication June 21, 2003; accepted for publication July 14, 2003.

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J Thorac Cardiovasc Surg 2003;126:1639-40

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0022-5223/2003 \$30.00 + 0

doi:10.1016/S0022-5223(03)01216-9

Several centers have reported successful midterm results in HIV-positive patients who have undergone solid-organ transplantation.^{1,2} These reports have generally been limited to hepatic and renal transplantation. However, Calabrese and colleagues³ recently described a case of an HIV-positive patient who underwent successful orthotopic cardiac transplantation with midterm follow-up. The aim of this report is to describe another case of successful cardiac transplantation in an HIV-positive patient.

Clinical Summary

Our patient was a 42-year-old man with a 4-year history of HIV without any previous opportunistic infections. The patient had idiopathic cardiomyopathy with an ejection fraction of 10% and a history of multiple admissions for New York Heart Association

TABLE 1. Review of literature on solid-organ transplantation in HIV+ recipients

Reference	Transplants (n)	Organ	Alive at follow-up (%)	Mean follow-up time (y)
Tzakis and associates ⁵	11	7 livers	28	1.8
		3 kidneys	100	3.8
		1 heart	100	2.1
Ragni and colleagues ⁶	1	Liver	100	0.5
Roland and Stock ¹	45	26 kidneys	92	0.8
		19 livers	79	0.8

class IV heart failure, which were treated with intravenous milrinone. During this time period, his viral load was undetectable, and his absolute CD4 count was 40% to 100% of normal values (596-1140/ μ L).

The patient underwent an unremarkable orthotopic heart transplantation and was discharged on postoperative day 9. It is now 2 years after his transplantation, and he has since not developed any opportunistic infections, has returned to work, and is maintained on lamivudine (Epivir), viread (Tenofovir), and viramune (Nevirapine) in addition to low-dose standard immunosuppressants.

Over the 2-year follow-up period, the patient had one episode of focal acute rejection (International Society for Heart and Lung Transplantation grade 2). Serial HIV-1 blood quantification continues to demonstrate an undetectable viral load (ie, <50 copies of HIV-1 RNA per milliliter of plasma). The patient's CD4 cell count has remained at 650 to 1000/ μ L.

Discussion

Since the introduction of more effective treatment options for HIV, such as protease inhibitors and antiretroviral therapy, the life expectancy of patients with HIV has significantly improved.⁴⁻⁶ As a consequence, an increasing number of HIV-positive patients are presenting with manifestations of end-stage organ dysfunction, such as cardiomyopathy.⁴ To date, there have been several reports of successful liver and kidney transplantation in HIV-positive patients (Table 1).^{1,2,5,6} More recently, a case report described successful heart transplantation in a patient with a 10-year history

of HIV, multiple previous opportunistic infections, and Kaposi sarcoma.³

The patient in our report had a very different preoperative clinical profile. Our patient had an undetectable viral load, normal CD4 count, and no history of opportunistic infections. This is consistent with the patient profiles that have been described in previous reports of successful liver and kidney transplantation in HIV-positive patients.^{1,2} It is our opinion that the presence of HIV disease in and of itself should not serve as a contraindication for heart transplantation. Cardiac transplantation might be a therapeutic option in carefully selected patients with HIV. A careful preoperative evaluation of each HIV-positive patient is warranted. We are not advocating indiscriminate transplantation of patients with HIV. Given the limited experience with transplantation in these patients, we believe that cardiac transplantation should be reserved for only those HIV-positive patients with undetectable viral loads, normal CD4 counts, and no history of opportunistic infections. In this subset of patients, it is possible that survival might be similar to that of patients without HIV. It is important for single centers to report their transplant experience in HIV-positive patients. However, study of more patients with longer follow-up periods is necessary before definitive statements regarding their outcome and allocation of scarce resources can be made.

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