

(PB4004) CMV-SEROPOSITIVE COLLATERAL DONORS SUPERIOR TO CMV-SERONEGATIVE DONORS TO IMPACT OUTCOMES OF ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

Topic: 23. Stem cell transplantation - Clinical

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Background

When a serological matched donor for a CMV-seropositive recipient is unavailable, a CMV-seropositive collateral donor might be an alternative option. However, relative data from the Chinese population is currently limit.

Aims

How to make a donor selection between a CMV-seropositive collateral donor and a CMV-seronegative donor.

Methods

This retrospective study collected data from patients with hematological malignancies who received allogeneic grafts from CMV-seropositive collateral donors and CMV-seronegative donors at Peking University People's Hospital between January 2017 and March 2025 (excluding second allogeneic hematopoietic stem cell transplantation). The study compared CMV infection-related events, overall survival (OS), non-relapse mortality (NRM), and cumulative incidence of relapse (CIR) between the two groups.

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Results

The median follow-up time was 885 days (Interquartile range, IQR: 350–1307 days). Without letermovir prophylaxis, the incidence of refractory CMV viremia (87.5% vs 50.0% $p = 0.007$) of the CMV-seronegative donor group was significantly higher than that of the CMV-seropositive collateral donor group, and similarly the median clearance of initial CMV viremia of the CMV-seronegative donor group was longer (25 days vs 17 days $p = 0.004$) compared to the CMV-seropositive collateral donor group. Letermovir prophylaxis had significantly reduced the incidence of refractory CMV viremia of the CMV-seronegative donor group (40.7% vs 87.5% $p = 0.003$), but which of the CMV-seronegative donor group was still higher than that of the CMV-seropositive collateral donor group (40.7% vs 12.0% $p = 0.020$). However, the 3-year OS rate, NRM rate, and CIR between the two groups were comparable. (see table 1)

CMV disease was an independent risk factor affecting OS (HR 3.0, 95%CI: 1.3–7.3, $p = 0.014$) and NRM (HR 3.1, 95%CI: 1.1–8.8, $p = 0.035$) of patients who received allogeneic hematopoietic stem cell transplantation. Logistic regression analysis identified refractory CMV viremia as an independent risk factor for CMV disease (OR 32.7, 95%CI: 3.1–342.6, $p = 0.004$). In addition, logistic regression analysis showed that CMV-seronegative donor without letermovir prophylaxis was an independent risk factor for refractory CMV viremia ($p = 0.005$).

Table 1 Transplant outcomes between CMV-seronegative donors and CMV-seropositive collateral donors in the pre-letermovir era and letermovir era

	the pre-letermovir era		P value	letermovir era		P value
	CMV-seronegative donors, n = 16	CMV-seropositive collateral donors, n = 58		CMV-seronegative donors, n = 27	CMV-seropositive collateral donors, n = 25	
Neutrophil engraftment time, median (95%CI)	+12(10–14) days	+14(13–14) days	0.880	+12(11–13) days	+14(13–15) days	0.001
Platelet engraftment time, median (95%CI)	+21(13–29) days	+16(13–19) days	0.408	+14(13–15) days	+19(17–21) days	0.109
Refractory CMV viremia, n(%)	14(87.5%)	29(50.0%)	0.007	11(40.7%)	3(12.0%)	0.020
CMV disease, n(%)	4(25.0%)	6(10.3%)	0.129	2(7.4%)	5(20.0%)	0.184
3-year OS (95%CI)	75.0% (53.8%–96.2%)	80.0% (68.6%–91.4%)	0.479	88.3% (75.8%–100.0%)	76.4% (58.0%–94.8%)	0.622
3-year NRM (95%CI)	19.6% (0%–39.6%)	9.8% (1.8%–17.8%)	0.278	11.7% (0%–24.2%)	20.1% (2.8%–37.4%)	0.865
3-year CIR (95%CI)	6.7% (0%–19.2%)	19.8% (8.0%–31.0%)	0.291	11.8% (0%–24.3%)	8.2% (0%–19.0%)	0.629

Summary/Conclusion

CMV-seronegative donors were associated with increased CMV-related events, and although improvements have been seen in the letermovir era, CMV-seropositive collateral donors have potential advantages in CMV infection control. However, overall survival was comparable between the two groups.

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