(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.

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			**letermovir era**		
	CMV-seronegative donors,n = 16	CMV-seropositive collateral donors, n = 58	P value	CMV-seronegative donors,n = 27	CMV-seropositive collateral donors,n = 25	P value
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（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（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（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.