Cytomegalovirus reactivation and early outcomes after allogeneic HSCT in a high-seroprevalence, resource-constrained setting

Prospective observational study from North India

Paritosh Garg, Mehak Trehan, Anusha Swaminathan, Sherook J, Devyani Surange, Neha Rastogi Panda, Akriti Kothari, Vishwa Makadia, Shrinidhi Nathany, Rahul Bhargava*

Department of Clinical Hematology and Bone Marrow Transplantation, Fortis Memorial Research Institute, Gurugram, Haryana, India
*Corresponding author: Rahul Bhargava | bhargava777@gmail.com

BACKGROUND AND OBJECTIVE

CMV remains a major infectious complication after allogeneic HSCT, especially in high-seroprevalence settings where access to letermovir may be limited. We described CMV reactivation, end-organ disease, antiviral management and day +100 outcomes in a North Indian transplant programme.

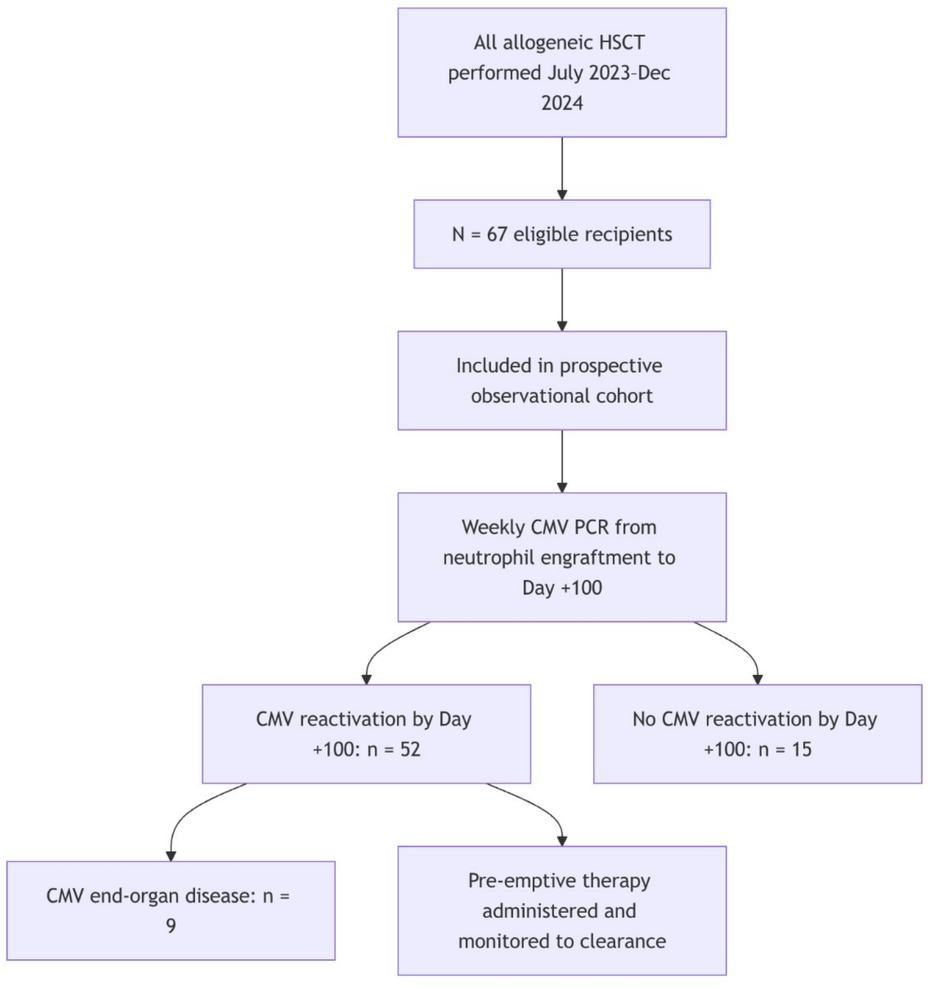
METHODS

- Prospective observational cohort of consecutive allogeneic HSCT recipients transplanted from July 2023 to December 2024.
- Weekly quantitative CMV PCR from neutrophil engraftment through day +100.
- CMV DNAemia, end-organ disease, antiviral therapy and day +100 outcomes were recorded.
- Associations used Fisher exact or chi-square testing and non-parametric comparisons where appropriate.

COHORT AT A GLANCE

67	34	56.7%	32.8%
RECIPIENTS	MEDIAN AGE	MSD	HAPLO

STUDY FLOW



ANTIVIRAL PREVENTION AND TREATMENT

Management measure	Result
Valacyclovir prophylaxis	**64/67 (95.5%)**
Letermovir prophylaxis	**3/67 (4.5%)**
Initial ganciclovir/valganciclovir	**44/52 (84.6%)**
Foscarnet switch or escalation	**7/52 (13.4%)**
Anti-CMV therapy duration	**17.5 days (IQR 14-29)**

Selected references: Einsele et al. Blood 2020; Ljungman et al. Lancet Infect Dis 2019; Marty et al. N Engl J Med 2017.

KEY FINDING

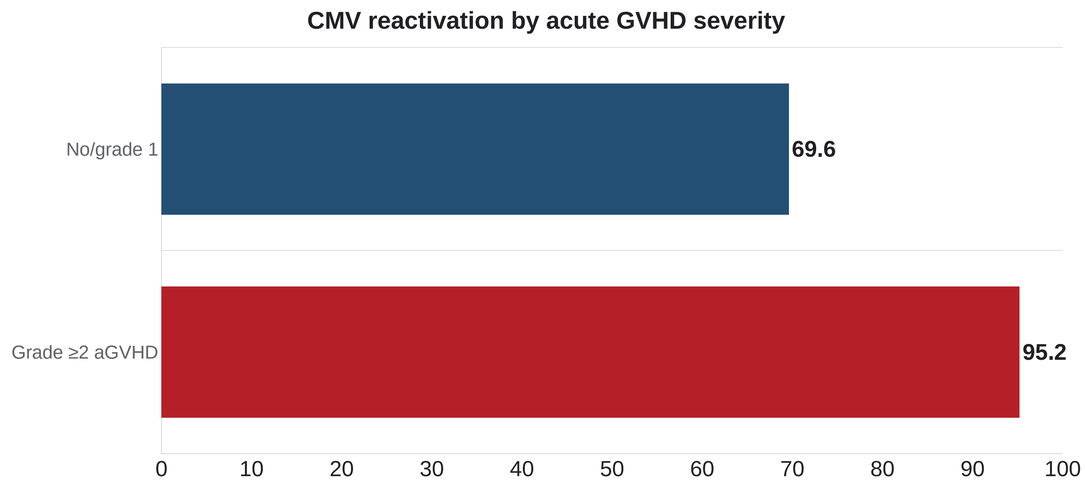
CMV reactivation affected 77.6% of recipients by day +100. Grade ≥2 acute GVHD identified a particularly high-risk subgroup (OR 8.75, p=0.026).

CMV BURDEN AND EARLY SURVIVAL

77.6%	13.4%	32.7%	88.1%
REACTIVATION	CMV DISEASE	RECURRENT CMV	DAY +100 OS

End-organ disease: colitis n=5, pneumonitis n=3, severe sepsis with persistent CMV n=1.

ACUTE GVHD IDENTIFIED THE HIGHEST-RISK GROUP



Grade ≥2 aGVHD: OR 8.75 (95% CI 1.07-71.76), p=0.026.

DAY +100 OUTCOMES

Outcome	CMV+ (n=52)	CMV- (n=15)
Alive and disease-free	43 (82.7%)	14 (93.3%)
Alive with relapse	2 (3.8%)	0
Non-relapse mortality	6 (11.5%)	1 (6.7%)
Relapse mortality	1 (1.9%)	0
Overall survival	45 (86.5%)	14 (93.3%)

Day +100 mortality did not differ significantly by CMV reactivation status (p=0.67).

CLINICAL IMPLICATIONS

- Grade ≥2 acute GVHD supports intensified CMV surveillance and risk-adapted prevention.
- Limited letermovir exposure (4.5%) prevents any estimate of prophylactic efficacy in this cohort.
- Prolonged treatment was most evident with systemic immunosuppression or tissue-invasive disease.

CONCLUSION

CMV reactivation and CMV disease remained frequent after allogeneic HSCT in this high-seroprevalence, resource-constrained setting. Moderate-to-severe acute GVHD identified patients at greatest risk. Risk-adapted monitoring and improved access to well-tolerated prophylaxis may reduce this burden.

LIMITATIONS

Single-centre cohort, modest sample size, limited letermovir exposure, follow-up focused on day +100, and no systematic viral-load kinetics or CMV-specific immune monitoring.

Correspondence: Dr Rahul Bhargava, Director and Head, Clinical Hematology and Bone Marrow Transplantation, Fortis Memorial Research Institute, Gurugram, India | bhargava777@gmail.com | ORCID 0000-0001-5769-8073