(PB4035) LETERMOVIR FOR CYTOMEGALOVIRUS PREVENTION IN RELAPSED/REFRACTORY ACUTE LEUKEMIA AND LYMPHOMA RECEIVING SEQUENTIAL CD7 CAR-T CELL THERAPY BRIDGING ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

Topic: 23. Stem cell transplantation - Clinical

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Background

To evaluate the real-world safety and efficiency of letermovir in preventing cytomegalovirus infection in patients undergoing sequential CD7 CAR-T cell therapy bridging allogeneic hematopoietic stem cell transplantation for relapsed/refractory acute leukemia and lymphoma.

Methods

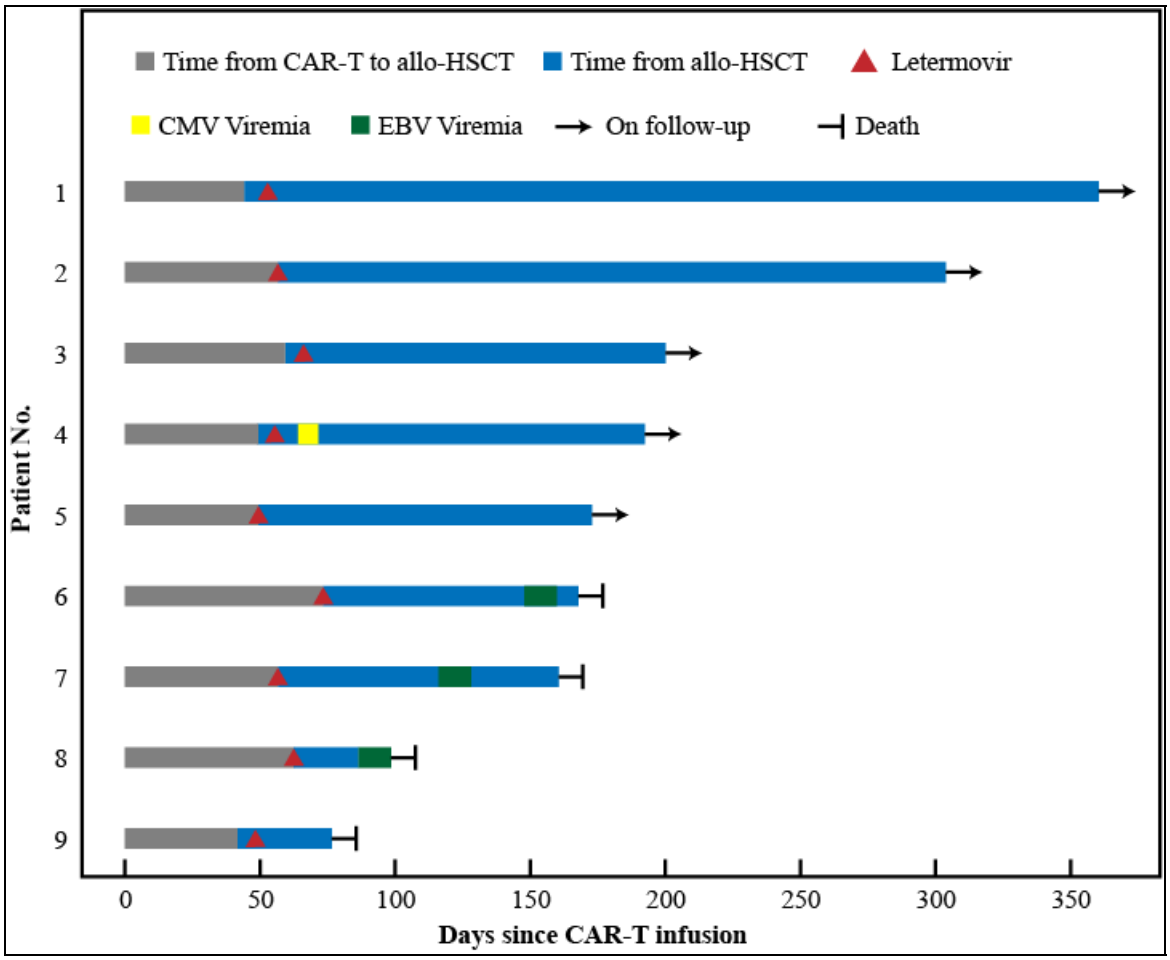
This single-center, retrospective, observational study enrolled patients with relapsed/refractory acute leukemia and lymphoma who received sequential CD7 CAR-T cell therapy bridging allo-HSCT at the Institute of Hematology & Blood Diseases Hospital, Chinese Academy of Medical Sciences（1st June, 2024- 1st May, 2025）. All enrolled patients were scheduled to receive letermovir for CMV prophylaxis.Prophylaxis was initiated within one week after transplantation and continued until day 100 post-allo-HSCT. The primary endpoint was the breakthrough CMV infection rate.

Results

A total of 9 patients were enrolled, including 5 with T-lymphoblastic leukemia/lymphoma, 3 with T-cell acute lymphoblastic leukemia (T-ALL), and 1 with mixed-phenotype acute leukemia. Eight patients received autologous CAR-T cell therapy, while 1 received allogeneic CAR-T cells. The median time from diagnosis to CAR-T cell infusion was 119 days (83-285 days), and the median time from CAR-T cell infusion to hematopoietic stem and progenitor cell (HSPC) infusion was 57 days (41-74 days). The median follow-up time from CAR-T cell infusion was 5.6 months (2.5-11.9 months), and the median overall survival (OS) for all patients was 10.5 months (6.6-16.6 months).
All 9 patients who received CD7 CAR-T cell therapy bridging allo-HSCT started letermovir prophylaxis within one week after transplantation initiation **(Figure 1)**. The median duration of letermovir prophylaxis was 100 days (19-100 days). During prophylaxis, 3 patients (33.3%) required intensive care unit admission due to severe infections. One patient (11.1%) experienced a breakthrough CMV infection on day 14 post-transplantation, with an initial CMV DNA load of 914 copies/mL; the infection resolved after 2 days of adjunctive ganciclovir therapy, with subsequent CMV DNA conversion to negative. Five patients completed letermovir prophylaxis until day 100 post-transplant, and none of these patients developed CMV infection from drug discontinuation until the end of follow-up. However, 3 patients (33.3%) developed Epstein-Barr virus (EBV) infection during letermovir prophylaxis, including 1 case of refractory EBV infection. The median time to EBV viremia onset was 60 days post-transplantation, with a mean duration of 27.0 days. Four patients died due to infections post-transplantation; notably, 3 of these 4 patients had EBV viremia, with 1 death directly attributed to EBV infection and the others to severe infections. Letermovir prophylaxis demonstrated a favorable safety profile, with no serious adverse events related to the drug observed.

Summary/Conclusion

In a real-world setting, letermovir demonstrated significant efficacy in preventing CMV infection in patients with acute leukemia and lymphoma undergoing sequential CD7 CAR-T cell therapy bridging allo-HSCT. The high risk of CMV reactivation post-CAR-T therapy has been confirmed in multiple studies. The CMV infection rate observed in this study is significantly lower than previously reported rates for CD7 CAR-T bridging transplantation. Further large-scale cohorts will hold greater promise to verify letermovir for CMV prophylaxis in high-risk populations undergoing CD7 CAR-T bridging allo-HSCT.



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