(PS1486) CD19 CAR-T CELLS FEATURING A CD8A HINGE GLYCINE DELETION EXHIBIT FAVORABLE SAFETY AND EFFICACY IN R/R ALL

Topic: 02. Acute lymphoblastic leukemia - Clinical

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Background

To evaluate the safety and efficacy of CD19 chimeric antigen receptor T (CAR-T) cells featuring a glycine–glycine deletion (GG-deletion) in the CD8α hinge region in patients with relapsed or refractory B-cell acute lymphoblastic leukemia (R/R B-ALL).

Aims

This study aims to provide evidence to support further clinical development of this modified CAR-T platform.

Methods

Patients with R/R ALL who received CD19(GG) CAR-T cell infusion were enrolled. CAR-T cells were administered at dose levels of 1×10^6/kg and 2×10^6/kg. The primary endpoint was safety, including the incidence and severity of cytokine release syndrome (CRS) and immune effector cell–associated neurotoxicity syndrome (ICANS). Secondary endpoints included objective response rate , complete remission rate, minimal residual disease negativity rate, event-free survival, and in vivo expansion kinetics of CAR-T cells.

Results

Between November 2022 and November 2025, a total of 16 patients were enrolled. The median age was 30 years (range, 14–60), and the median number of prior treatment lines was 3 (range, 2–7). CRS occurred in 62.5% of patients, with grade 3 CRS observed in only 6.3%; no grade 4–5 adverse events were reported. ICANS occurred in 12.5% of patients, all of which were grade 1. At 1 month after infusion, the objective response rate was 100%, and the rate of complete remission or complete remission with incomplete hematologic recovery was 93.8%. The minimal residual disease-negative rate was 93.3%. With a median follow-up of 14.2 months (95% CI, 12.104–16.269), the 1-year event-free survival rate was 59.2%, and the 1-year overall survival rate was 87.5%. The peak expansion of CAR-T cells reached 36,596.1 copies/μg DNA (range, 4,580–259,437).

Summary/Conclusion

CD19(GG) CAR-T cell therapy demonstrated a favorable safety profile with a low incidence of severe toxicities and induced deep remissions in patients with R/R ALL, representing a promising therapeutic option for this population.

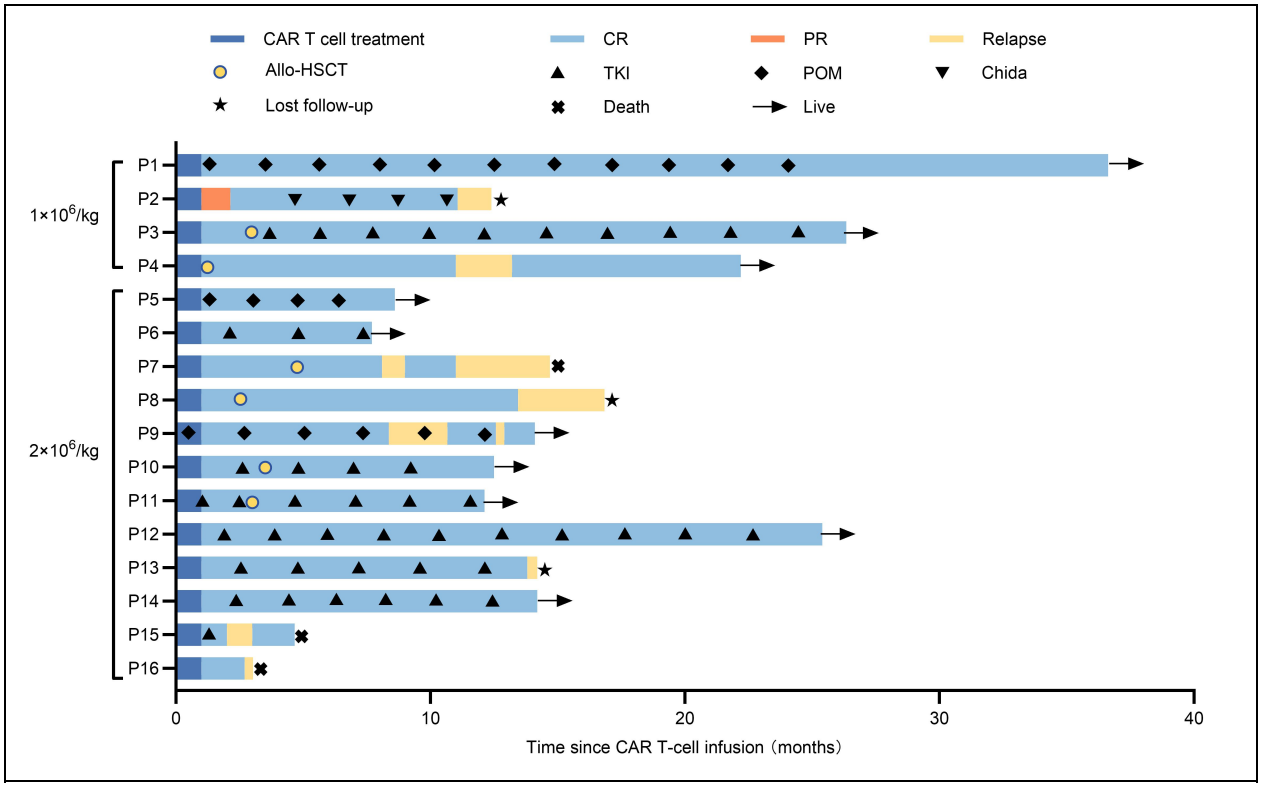

Figure. Swimmer plot of follow-up and clinical outcomes after CD19(GG) CAR-T cell therapy Each horizontal bar represents an individual patient treated with CD19(GG) CAR-T cells, plotted from the day of infusion to the last follow-up or occurrence of an event. Patients are ordered by infused CAR-T cell dose from lowest to highest, and bar length indicates follow-up duration. Colors and symbols denote disease status and key clinical events: color changes specifically reflect transitions in disease status; circles indicate allogeneic hematopoietic stem cell transplantation (allo-HSCT); triangles and squares denote maintenance therapy with tyrosine kinase inhibitors (TKIs), pomalidomide, or chidamide; crosses indicate death. Patients alive and event-free at last follow-up are shown as censored. This figure is descriptive and not intended for statistical inference of dose–outcome relationships.