浙江大学医学院附属第一医院
THE FIRST AFFILIATED HOSPITAL, COLLEGE OF MEDICINE, ZHEJIANG UNIVERSITY
浙 江 省 第 一 医 院
THE FIRST HOSPITAL OF ZHEJIANG PROVINCE

Secondary donor-derived CD19 CAR-T therapy is safe and efficacious in acute lymphoblastic leukemia with extramedullary relapse after first autologous CAR-T therapy bridging to haploidentical HSCT: A case report

De-Lin Kong, Lin Yang, Ting-Ting Yang, Jia Geng, Rui-Rui Jing, Qi-Qi Zhang, Quo-Qing Wei, He Huang and Yong-Xian Hu

Key words: Extramedullary relapse, allogeneic anti-CD19 chimeric antigen receptor T cells, haploidentical hematopoietic stem cell transplantation, acute lymphoblastic leukemia,

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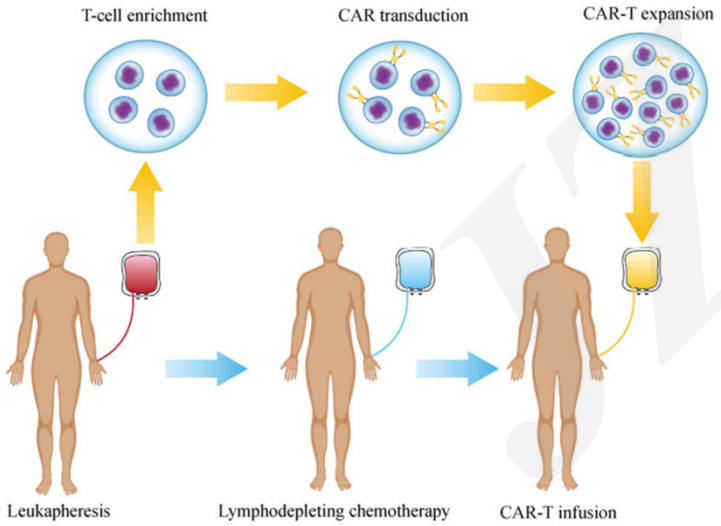
Research summary

This article reported a case of a 62-year-old woman diagnosed with CD19 positive B-ALL. She recieved first CAR-T infusion and allo-HCST treatment, but ultimately presented extramedullary relapse(ER). We performed donor-derived CD19 CAR-T cell infusion secondly, and quickly achieved complete remission in bone marrow.

12/2013
Cancer Immunotherapy was named the No. 1 breakthrough of the year (2013)

Emily has been disease-free for 9 years



3 months after treatment, PET/CT detection showed full resolution of all extramedullary leukemia lesions. In conclusion, CAR-T with the same target remains an option for the second treatment and is beneficial in combination with other targets sellection for possible subsequent therapy.

Figures

Fig1

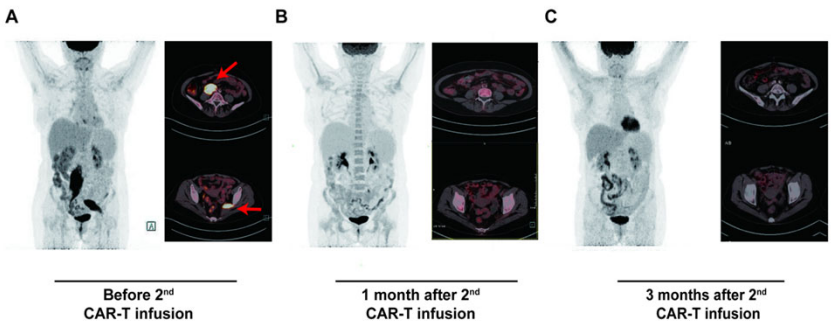


Figure 1 Positron emission tomography/computed tomography (PET/CT) scanning at different time points. (A) PET/CT before the second donor-derived chimeric antigen receptor-T (CAR-T) cell infusion. The red arrows indicate abnormal uptake involving the right retroperitoneal cavities and the left pelvic wall. (B) The PET/CT scans show significantly diminished leukemia lesions one months after the second donor-derived CAR-T cell infusion. (C) The PET/CT scans prove complete remission three months after the second donor-derived CAR-T cell infusion.

Fig2

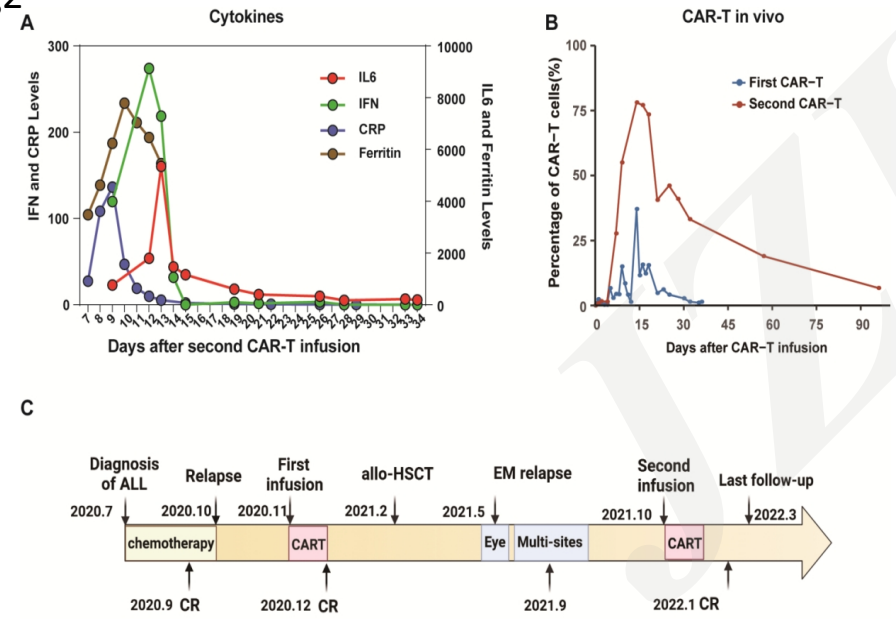


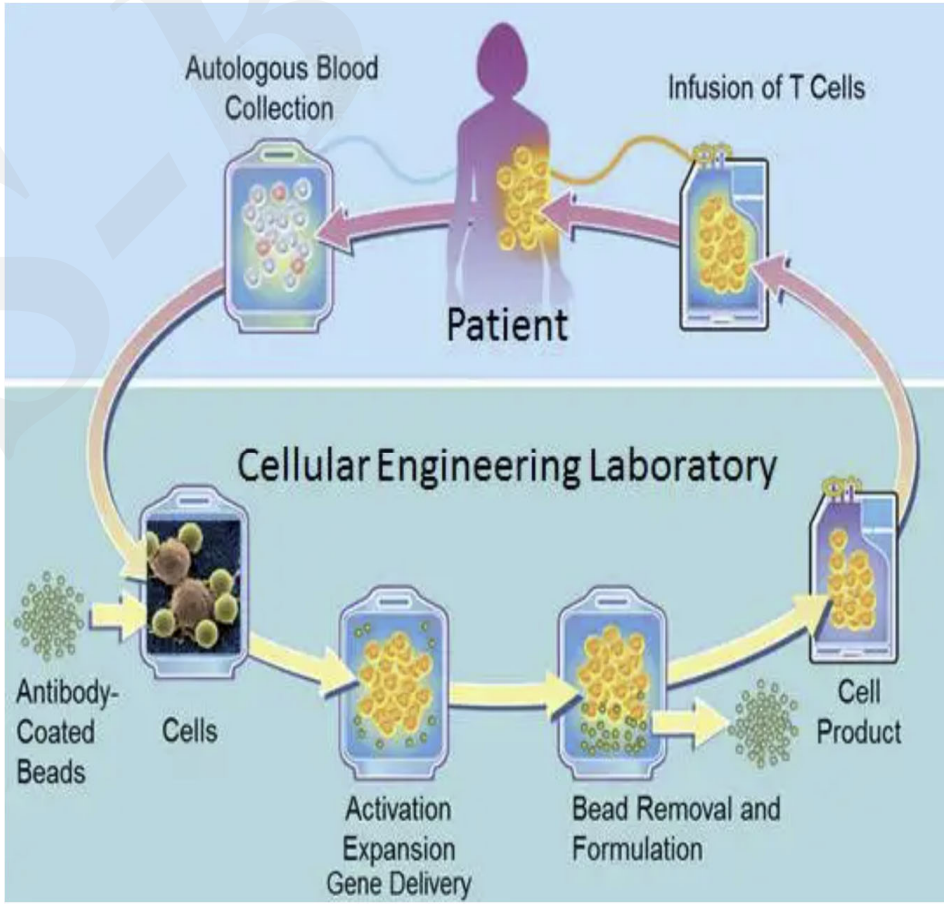
Figure 2 Clinical data of the patient. (A) Chimeric antigen receptor-T (CAR-T) percentage of the first and second CAR-T therapy assessed by flow cytometry. (B) Levels of cytokine and ferritin during the second CAR-T infusion. (C) Therapeutic process.

ALL, acute lymphoblastic leukemia; Allo-HSCT, allogeneic hematopoietic cell transplantation; CR, complete remission; EM; extramedullary.

Innovation points

A Donor-derived CAR-T therapy can exert graft-versus-leukemic effects mediated by alloreactive effector T cells

B No signs of GVHD after all-HSCT following donor-derived CAR-T therapy were observed




Thank you!