ME4

Factors impacting outcomes of CD19 CAR-T cell immunotherapy for B cell malignancies

Cameron J. Turtle
University of Sydney, Camperdown, NSW, Australia

Aim/Introduction:
Lymphodepletion chemotherapy followed by infusion of T cells that are genetically modified to express a chimeric antigen receptor (CAR) targeted to CD19 is a novel therapy for patients with relapsed and/or refractory B cell malignancies. Here, we will discuss factors that govern efficacy and toxicity outcomes after CD19 CAR-T cell immunotherapy.

Expert

Name/title: Cameron Turtle / Professor
Affiliation: University of Sydney, Australia; Fred Hutchinson Cancer Center, USA

Brief self-introduction:
Prof. Turtle trained as a haemato-oncologist in Sydney before completing a PhD in dendritic cell immunotherapy at the University of Queensland and a postdoctoral research fellowship in T cell immunotherapy at Fred Hutchinson Cancer Research Center (FHCRC) in Seattle, USA. He spent 16 years in Seattle and was Professor and Anderson Family Endowed Chair for Immunotherapy at FHCRC, Professor of Medicine at the University of Washington (UW), and an attending physician on the Hematopoietic Cell Transplant and Cellular Immunotherapy Services at Seattle Cancer Care Alliance (SCCA) until 2022. Dr. Turtle has served as Chair of the American Society of Hematology (ASH) Scientific Committee on Transplantation Biology and Cellular Therapies, Co-Chair of the Cellular Immunotherapy for Cancer Working Committee of the Center for International Bone Marrow Transplantation Research (CIBMTR), and Co-Chair of the Seattle Cancer Consortium Cancer Immunology Program. In 2022 he was appointed as CLEARbridge Chair of Cancer Immunotherapy at the University of Sydney. He has led clinical and laboratory research teams conducting multiple investigator-initiated phase 1 clinical trials of genetically modified cellular (CAR-T cell) immunotherapies for patients with haematologic malignancies. His research laboratory focuses on understanding the characteristics of distinct human T cell subsets, the development of novel tumor immunotherapies, and factors governing the immune response to cancer.

Related publications:
1) Gust et al. Endothelial activation and blood-brain barrier disruption in neurotoxicity after adoptive immunotherapy with CD19 CAR-T cells. Cancer Discovery. 2017.
2) Hirayama et al. The response to lymphodepletion impacts PFS in patients with aggressive non-Hodgkin lymphoma treated with CD19 CAR-T cells. Blood. 2019.
3) Sheih et al. Clonal kinetics and single cell transcriptional profiling of CAR-T cells in patients undergoing CD19 CAR-T cell immunotherapy. Nature Communications. 2020.

Facilitator

Name/title: Seitaro Terakura / Lecturer
Affiliation: Nagoya University Hospital

Brief self-introduction:
Dr. Terakura graduated from Nagoya University, and studied about virus-specific/CD19-specific CAR-T cells in Stan Riddell's lab in Fred Hutchinson Cancer Research Center, Seattle, and is currently working on development of novel CAR-T therapy at Nagoya University, Japan. His major research themes are gene-modified T cell therapy, particularly CAR-T cells.

Related publications:
1) Spacer Length Modification Facilitates Discrimination between Normal and Neoplastic Cells and Provides Clinically Relevant CD37 CAR T Cells. J Immunol. 2021 Jun 15; 206(12): 2862-2874.
2) Composite CD79A/CD40 co-stimulatory endodomain enhances CD19CAR-T cell proliferation and survival. Mol Ther. 2021 Sep 1; 29(9): 2677-2690.
3) Generation of CD19-chimeric antigen receptor modified CD8+ T cells derived from virus-specific central memory T cells. Blood. 2012 Jan 5; 119(1): 72-82.