A promising outlook: CAR T cell therapy improves patient quality of life

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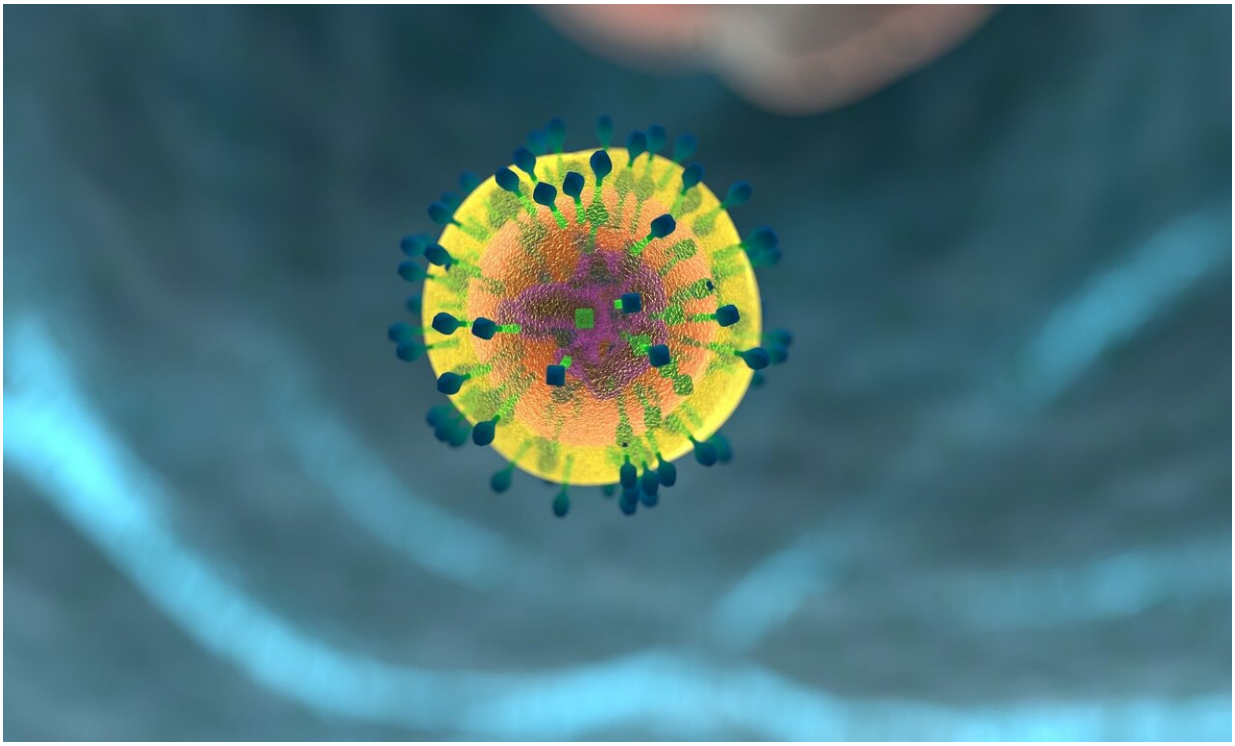

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Chimeric antigen receptor T-cell (CAR-T) therapy has transformed cancer treatment, yet relatively few studies have investigated the impact of the therapy on longitudinal patient quality of life—an aspect of care that often suffers from receiving traditional intensive cancer medications, such as chemotherapy. A new study published in *Blood*

Advances demonstrates that some effective cancer treatments do improve quality of life, revealing that patients with blood cancers experienced a significant improvement in their reported well-being six months after receiving CAR T-cell therapy.

CAR-T therapies are developed by harvesting a patient's own T cells (the immune system's primary cancer-killing cells), engineering them to target proteins specific to the surface of cancer cells, and reintroducing these modified T cells back into the patient's immune system to kill the cancer cells.

"CAR-T has revolutionized the treatment of patients with relapsed and refractory blood cancers. But it remains a unique treatment with unique toxicities, including cytokine release syndrome, which is an inflammatory flu-like ailment, as well as neurologic toxicities. And these complications can take a toll on patients," said Connor Johnson, MD, an oncologist at Massachusetts General Hospital and lead study author. "Given the relatively new development of CAR-T therapy, there are a limited set of studies that have examined patient reported outcomes in those receiving these treatments."

To conduct this study, investigators enrolled 103 patients ages 23–90 with a blood cancer diagnosis from April of 2019 to November of 2021. Of these patients, 71% were diagnosed with lymphoma, 28% with myeloma, and 1% with B-cell acute lymphoblastic leukemia. Patients eligible to receive CAR-T therapy were most commonly administered tisagenlecleucel (34%), lisocabtagene maraleucel (16%), axicabtagene ciloleucel (13%), and idecabtaene vicleucel (12%).

The researchers administered self-reported questionnaires measuring quality of life variables at time intervals including prior to CAR-T cell infusion and one week, one month, three months, and six months after CAR-T cell infusion. Quality of life was measured using a 27-item

questionnaire, known as the Functional Assessment of Cancer Therapy-General (FACT-G), which measures quality of life factors using four different subscales (physical, functional, emotional, and social) at all time points.

Psychological distress was measured using the Hospital Anxiety and Depression Scale (HADS), which assessed variables designed to measure anxiety and depression symptoms at all time points. Lastly, major depressive symptoms were also measured using the PHQ-9, and post-traumatic stress disorder symptoms were measured using the Post-Traumatic Stress Checklist. Researchers also recorded physical symptoms using the Edmonton Symptom Assessment System, which assessed pain, fatigue, drowsiness, nausea, appetite, dyspnea, insomnia, trouble swallowing, and well-being over 24 hours.

Overall, 76% of patients achieved remission and 33% experienced immune effector cell-associated neurotoxicity syndrome, a common side effect of CAR-T therapy. Of note, 38% of patients did not survive the length of follow up for the study.

Investigators were specifically interested in understanding how CAR T-cell therapy affected patient quality of life. They found that for most individuals, quality of life initially declined in the first week after the administration of CAR T-cell therapy (decreasing from a median baseline of 77.9 to 70.1), a time when treatment related symptoms are typically at their peak, and then significantly increased (to a median of 83.7) by the six-month mark post infusion. Similarly, they found improvements in the physical symptom burden, as well as anxiety symptoms.

While most study participants ultimately experienced an improvement in their quality of life, roughly 20% of patients experienced persistent physical and psychological symptoms, which at times were detrimental

to quality of life.

Dr. Johnson explains that it is important to recognize the burden CAR-T therapy brings to some patients to maximize the effectiveness of these therapies and improve care for all individuals living with hematologic malignancies.

"Here we show significant improvements in quality of life among patients with an array of blood cancer diagnoses, receiving a variety of CAR-T products," said Dr. Johnson. "However, we also identify a distinct subset of patients who have persistent physical and psychological symptom burden, even at the six-month post CAR-T time point. And I hope that these findings lead to additional interventions with a goal of improving the overall quality of life trajectory of all patients."

More information: Connor Johnson et al, *Blood Advances* (2023).

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