

Dangers of CAR-T treatments linked to ‘particularly messy’ method of killing tumors

Techniques to genetically modify patient [immune cells](#) have revolutionized the fight against hard-to-treat cancers. But they can come with dangerous side effects. Now, researchers have found one reason why.

A [particularly messy form of cell death](#) sparks severe inflammation in patients receiving CAR-T cell immunotherapy for blood cancers, researchers report January 17 in Science Immunology.

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Normally as cells die, they shrink and break apart — a highly controlled process whose debris is easily vacuumed up by the body’s natural defenses. During CAR-T cell treatment, however, targeted cancer cells can swell and rupture in a manner typically associated with infection, Bo Huang, an immunologist at the Chinese Academy of Medical Sciences in Beijing, and colleagues found. This explosive cell death, or pyroptosis, causes dead cells to expel their contents. That, in turn, prompts the immune system to produce cytokine chemicals that trigger inflammation.

Cytokine release syndrome, [one of the most common side effects for CAR-T cell therapy patients](#) (SN: 6/27/18), can cause high fever, rapid heartbeat and multi-organ failure. Although most people survive, some require intensive care. Until now, scientists didn’t know what triggered the syndrome. Pinpointing the root cause could help researchers find ways to stop the onslaught of inflammation, Huang says.

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