New cancer therapy uses white blood cells from healthy donors

Trial to determine if allogeneic T cells can deliver more effective treatment

Josiah Tan

A new treatment using white blood cells from healthy donors that are modified to more effectively recognize and kill cancer cells will be trialled at a Singapore hospital.

The two-year trial at the National University Cancer Institute, Singapore (NCIS) will test the therapy on nine to 18 patients who have lymphoma, multiple myeloma, colorectal cancer, lung cancer, bone cancer or ovarian cancer – six of the most common types of cancers in Singapore.

The new treatment, developed by local biotech firm CytoMed Therapeutics, uses cancer patients with modified T cells – a type of white blood cell that helps the body fight infections and diseases, including cancer.

CytoMed's new treatment potentially advances existing chimeric antigen receptor (CAR) T-cell therapies by using white blood cells from healthy, cancer-free donors instead of from cancer patients themselves, as is the current practice.

Cancer cells are occasionally able to evade detection by the body's immune system, and this is where chimeric immunotherapies like the CAR T-cell therapy come in.

"T cells in our body may not always be able to recognize or kill cancer cells, because the cancer cells can disguise themselves as normal cells or evade the immune system that can suppress the patient's immune system," said CytoMed chief operating officer Tan Wei Kiat.

"CytoMed's new product grafts healthy T cells expressing a chimeric antigen receptor, on the surface of which T cells can attack tumour and destroy cancer cells more effectively."

The CAR T-cell therapy is much more targeted than conventional cancer treatments such as chemotherapy, which kills both cancer cells and healthy cells.

The two CAR T-cell therapies currently available in Singapore are both allogeneic – meaning that the T cells are harvested from the patient's healthy donors instead of from cancer patients themselves.

They are approved to treat only certain relapsed or refractory types of leukaemias or lymphomas. Dr Tan said: "Our treatment is allogeneic, which means that the T cells are obtained from healthy donors, who do not have to be genetically matched with the intended patients. Unlike the allogeneic T cells, which can experience graft-versus-host disease, our T cells are made of higher quality, since they are obtained from healthy donors as opposed to sick patients."

The trial will assess if this leads to more effective treatment, Dr Tan said.

As part of a trial in 21 patients with multiple myeloma, an optimistic sign that the therapy could work, 39% of the patients showed a reduction in the size of lesions or complete remission of lesions, said CytoMed's Dr Hough Sanders.

Another potential advantage of CytoMed's allogeneic T cells is that they may be able to tackle a wider range of cancers.

The trial will also evaluate if there are any specific types of cancer that respond better to the treatment.

While existing CAR T-cell therapy can treat lymphomas and other types of blood cancers such as leukaemias and lymphomas, CytoMed said its technology may be able to treat more than 30 different types of solid and blood cancers.

Solid cancers include cancers of the breast, lung, liver and ovaries. Other doctors not involved in the trial also said the use of diagnostic T cells could improve the efficiency of CAR-T treatments and, when the treatment becomes fully commercialised, minimise the waiting time for patients.

"The CAR-T treatment process in Singapore, which takes a few weeks, is already time-consuming. The idea that we could get a product out of the shelf that could treat many types of cancers, which are patient-specific," said Dr Hoong Poh Yew, a haematologist at Tan Tock Seng Hospital.

Dr Hoong added: "It is very exciting. This is a completely new kind of treatment. If we had the CAR-T product, we might be able to treat patients who are earlier in their disease stage. We can have earlier access to this treatment."

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