Immunotherapy for Epstein-Barr related lymphomas

January 14 2016

Imagine that your immune system could be educated so that it was able to recognize specific diseases and then destroy them. Science fiction? Or perhaps futuristic? Not anymore.

Health Canada recently approved, for the first time in Canada, a clinical project for a Phase I study aimed at treating lymphomas associated with the Epstein-Barr virus (EBV) through adoptive cellular immunotherapy that is specific to EBV. The tests will be led by Dr. Jean-Sébastien Delisle, Professor at the Faculty of medicine of University of Montreal, and his team at the Centre of Excellence for Cellular Therapy (CETC) at Maisonneuve-Rosemont Hospital.Montreal, East Island Integrated University Health and Social Services Centre (CIUSSS-Est).

In simple terms, by adapting methods initially developed in the US, the Centre of Excellence for Cellular Therapy project is designed to help restore the ability of immune-compromised patients to fight EBV. The virus, which is carried by most people and causes mononucleosis in someone who is otherwise healthy, may also cause life-threatening lymphomas, particularly in a patient with a compromised immune system.

"We're starting with EBV," said Dr. Delisle, "but once we have proof that this cellular product is safe, we'll be able to attack all the viruses that can jeopardize the health of patients, and other targets, such as those expressed by tumours."

How the treatment works

Cells are gathered and placed in a culture for approximately two weeks. This culture, combined with various stimulants, makes it possible to stimulate only those cells that are capable of recognizing the target virus. This "super-soup" of T lymphocytes that responds aggressively to the virus, forms a sort of army against the virus. When built up to "combat strength," it is then injected into the patient.

A crucial first phase

The first phase of tests which has just received approval from Health Canada is intended to make sure that the treatment is well tolerated by patients. While the primary effect is to combat resurgence of the virus, it is important to realize that EBV is an oncogene: it can cause cancer cells to appear. There is therefore an additional effect, which is to reduce the risk of relapse or transformation. Although Dr. Delisle has targeted EBV as a strategic opening, once the treatment is shown to be safe for patients, the same production of cultures can be applied to any sort common virus, and it is even possible that one cell culture can be "educated" to fight several viruses at once, with a "one-stop" solution foreseeable in the future.

Provided by University of Montreal