

01/09/2011

'Anti-cancer virus' shows promise

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An engineered virus, injected into the blood, can selectively target cancer cells throughout the body in what researchers have labelled a medical first.

The virus attacked only tumours, leaving the healthy tissue alone, in a small trial on 23 patients, [according to the journal Nature](#).

Researchers said the findings could one day "truly transform" therapies.

Cancer specialists said using viruses showed "real promise".

Using viruses to attack cancers is not a new concept, but they have needed to be injected directly into tumours in order to evade the immune system.

Smallpox to cancer

Scientists modified the vaccinia virus, which is more famous for being used to develop a smallpox vaccine.

The virus, named JX-594, is dependent upon a chemical pathway, common in some cancers, in order to replicate.

It was injected at different doses into the blood of 23 patients with cancers which had spread to multiple organs in the body.

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Prof John Bell University of Ottawa

In the eight patients receiving the highest dose, seven had the virus replicating in their tumours, but not in healthy tissue.

Prof John Bell, lead researcher and from the University of Ottawa, said: "We are very excited because this is the first time in medical history that a viral therapy has been shown to consistently and selectively replicate in cancer tissue after intravenous infusion in humans.

"Intravenous delivery is crucial for cancer treatment because it allows us to target tumours throughout the body as opposed to just those that we can directly inject."

Infection prevented further tumour growth in six patients for a time. However, the virus did not cure cancer. Patients were given only one dose of the virus as the trial was designed to test the safety of the virus.

It is thought that the virus could be used to deliver treatments directly to cancerous cells in high concentrations.

Prof Bell acknowledges that the research is still in the very early stages, but he said: "I believe that some day, viruses and other biological therapies could truly transform our approach for treating cancer."

Cancer Research UK's Prof Nick Lemoine, also director of Barts Cancer Institute, said: "Viruses that multiply in just tumour cells - avoiding healthy cells - are showing real promise as a new biological approach to target hard-to-treat cancers.

"This new study is important because it shows that a virus previously used safely to vaccinate against smallpox in millions of people can now be modified to reach cancers through the bloodstream - even after cancer has spread widely through the patient's body.

"It is particularly encouraging that responses were seen even in tumours like mesothelioma, a cancer which can be particularly hard to treat."