

Oncolytic virus

Virotherapy refers to a type of **medical treatment** that uses **viruses** to target and destroy diseased **cells**, typically **cancer cells**. The concept behind virotherapy is to leverage the natural ability of certain viruses to infect and replicate within specific cells. This approach can be a form of targeted therapy, aiming to selectively kill cancer cells while minimizing damage to healthy tissues.

Key points about virotherapy:

Oncolytic Viruses: Virotherapy often involves oncolytic viruses, which are viruses that selectively infect and kill cancer cells. These viruses can be naturally occurring or genetically modified to enhance their anti-cancer properties.

Mechanism of Action: The oncolytic viruses can destroy cancer cells through various mechanisms, including direct cell lysis (rupture), induction of apoptosis (programmed cell death), and stimulation of the immune system to target cancer cells.

Immune System Activation: Virotherapy may also stimulate the patient's immune system to recognize and attack cancer cells. This immune response can contribute to a more comprehensive and sustained anti-cancer effect.

Types of Viruses Used: Various viruses have been studied for their oncolytic potential, including adenoviruses, herpes simplex viruses, measles viruses, and vaccinia viruses, among others.

Clinical Trials: Virotherapy is an area of active research and clinical trials. Researchers are investigating its safety, efficacy, and potential applications in different types of cancer.

Challenges and Considerations: Despite its promising potential, virotherapy faces challenges, including the development of resistance by cancer cells and potential side effects. Research continues to address these challenges and optimize virotherapeutic strategies.

It's important to note that the field of virotherapy is evolving, and specific details may vary based on ongoing research and clinical trials. Patients considering virotherapy should consult with their healthcare providers to discuss its suitability for their individual circumstances and the availability of any experimental treatments.

Treatment using a **virus** that has been changed in the laboratory to find and destroy **cancer cells** without harming healthy cells. It is a type of **targeted therapy**. Also called **oncolytic virotherapy**, **oncolytic virus therapy**, and **virotherapy**.

The concept of **virotherapy** for the treatment of malignant tumors dates back more than a century and can be divided into replication-competent oncolytic viruses and replication-deficient viral vectors.

Virotherapy is a treatment using biotechnology to convert viruses into therapeutic agents by reprogramming viruses to treat diseases. There are three main branches of virotherapy: anti-cancer oncolytic viruses, viral vectors for gene therapy, and viral **immunotherapy**. These branches utilize three different types of treatment methods: gene overexpression, gene knockout, and suicide gene delivery. Gene overexpression adds genetic sequences that compensate for low to zero levels of needed gene expression. Gene knockout utilizes RNA methods to silence or reduce the expression of

disease-causing genes. Suicide gene delivery introduces genetic sequences that induce an apoptotic response in cells, usually to kill cancerous growths.

Oncolytic virus for high-grade glioma

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