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Oncolytic viruses and cancer

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Abstract

The future of cancer drugs is very promising: RNA therapies, bacteria and oncolytic viruses are between the drugs oncologists have or will have to treat their patients. About the last one, since 1950s scientists began testing interferon-sensitive viruses with natural oncotropism and in 1990s, they have been modifying viruses and bacteria to develop tumor selectivity and they can reprogram viruses into oncolytic vectors by combining three types of modification: targeting, arming and shielding.

Currently, oncolytic viruses are powerful new therapeutic agents in cancer therapy and include viruses found in nature and viruses modified in the laboratory to reproduce efficiently in cancer cells without harming healthy cells. One oncolytic virus, T- VEC, a genetically modified form of a herpes virus for treating melanoma has been approved by the Food and Drug Administration. Another approved oncolytic virus is Rigvir in Latvia and Georgia for melanoma, pancreatic, kidney and lung cancer.

Laboratory studies conducted at the Memorial Sloan-Kettering Cancer Center suggest too triple- negative breast cancer might respond to treatment with an oncolytic agent and many other types of cancer like brain cancer can be treated with new approach.

Studies are currently ongoing about the compatibility between oncolytic virotherapy, chemotherapy like paclitaxel for breast cancer checkpoint inhibitors in patients with melanoma.

In general, oncolytic virus treatment has a safety profile and the side effects associated with T-VEC include chills, flu-like symptoms, injection site pain, nausea and fever.

The main mechanism used by virus to kill tumors according consensus involves an important immune component to the response.

In the other hand, some of the challenges of virotherapy include systemic delivery, intratumoral spread and improving anti-tumor versus anti-virus immune response and many trials are ongoing to address it and many other points of interest.

Biography:

Robens Molaire Saintil is a medical doctor since 2000. He did residence in internal medicine in Padre Billini Hospital and clinical Oncology in Heriberto Pieter Oncology Institute, Dominican Republic. He has a master in hospital management in Madrid, Spain and a PhD in nutritional Science at Atlantic International University of USA. To be update, he continues with MEDSCAPE and NCCN for continuing medical education since 2016 and has actually 120 credits. Now, he works at a provincial hospital in Monte Plata, Dominican Republic. He is very interested about investigations on this topic.

Speaker Publications:

1. John C. Bell, Ph.D. Ottawa Hospital Research Institute, University of Ottawa. How Oncolytic Virus Therapy is Changing Cancer Treatment. Updated January 2020.

2. Marie-Claude Bourgeois-Daigneault; Lauren Elizabeth St-Germain; Dominic Guy Roy; Adrian Pelin; Amelia Sadie Aitken; Rozanne Arulanandam; Theresa Falls; Vanessa Garcia; Jean-Simon Diallo; John Cameron Bell. Combination of Paclitaxel and MG1 Oncolytic Virus as a Successful Strategy for Breast Cancer Treatment. Breast Cancer Res. 2016; 18(83).

3. Roxanne Nelson BSN, RN. FDA Approves Imlygic, First Oncolytic Viral Therapy in the US. October 27, 2015. MEDSCAPE
4. Victoria Stern, MA. Today's Cancer Research Pioneers. March 23, 2015. MEDSCAPE.
5. Caroline Helwick. Oncolytic Virus Kills Tumor in Triple-Negative Breast Cancer October 25, 2011. MEDSCAPE
6. A.M. Young; Iain A. McNeish. Oncolytic Adenovira Gene Therapy in Ovarian Cancer: Why We Are Not Wasting Our Time A.M. Young; Iain A. McNeish Future Oncol. 2009; 5(3):339-357.

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