Editorial
Volume 10:4, 2021

Journal of Integrative Oncology

ISSN: 2329-6771

Open Access

Cancer Immunotherapy and Vaccine Treatment Strategies

Gordon*

Department of Oncology, Suez Canal University, Ismailia, Egypt

Introduction

The Cancer vaccines and oncolytic immune therapy are promising treatment strategies with potential to supply greater clinical benefit to patients with advanced-stage cancer. In particular, recombinant Vaccinia Viruses (VV) hold great promise as interventional agents. In this article, we first summarize the present understanding of virus biology and viral genes involved in host-virus interactions to further improve the utility of those agents in therapeutic applications. We then discuss recent findings from basic and clinical studies using VV as cancer vaccines and oncolytic immunotherapies. Despite encouraging results gleaned from translational studies in animal models, clinical trials implementing VV vectors alone as cancer vaccines have yielded largely disappointing results. However, the mixture of VV vaccines with alternate sorts of standard therapies has resulted in superior clinical efficacy. Another novel cancer vaccine approach is to stimulate anti-tumor immunity via dependent Dendritic Cells (DC) through the utilization of replication-attenuated VV vectors.

Oncolytic VVs have now been engineered for improved safety and superior therapeutic efficacy by arming them with immune-stimulatory genes or pro-apoptotic molecules to facilitate tumor immunogenic necrobiosis, leading to enhanced DC-mediated cross-priming of T cells recognizing tumor antigens, including neo antigens. Combinatorial approaches, most notably those using immune checkpoint blockade, have produced exciting pre-clinical results and warrant the event of innovative clinical studies. Finally, we discuss major hurdles that remain within the field and offer some perspectives regarding the event of next generation VV vectors to be used as cancer therapeutics. Cancer immunotherapy vaccines work similarly to mRNA vaccines for COVID-19, except they activate the system to attack tumors rather than an epidemic. These vaccines contain mRNA that encodes proteins made specifically by tumor cells. When the mRNA enters antigen-presenting cells, they start making the tumor protein and displaying it on their surfaces, triggering other immune cells to hunt and destroy tumors that also make this protein. However, mRNA is an unstable molecule that's quickly degraded by enzymes within the body.

For cancer immunotherapy, researchers have tried using nanoparticles to protect and deliver mRNA, but they're typically cleared from the body within 1-2 days after injection. Guangjun Nie, Hai Wang and colleagues wanted to develop a hydrogel that, when injected under the skin, would slowly release mRNA nanoparticles, in conjunction with an adjuvant a molecule that helps activate the immune system. Cancer immunotherapy is defined because the manipulation of the system to acknowledge and destroy cancer cells. Among approved immunotherapeutic agents, therapeutic cancer vaccines have the advantage of eliciting specific immune responses to tumor antigens. Accordingly, choice of target antigen is of utmost importance when considering vaccine design. Tumor-Associated Antigens (TAA) is self-antigens abnormally expressed by tumor cells. As a result of central and peripheral tolerance mechanisms, the bank of high-affinity T cells for TAAs could also be insufficient to elicit an immune reaction. Cancer vaccines using TAAs must, therefore, be potent enough to “break” this tolerance mechanism. Therapeutic cancer vaccines are supported specific stimulation of the system using tumor antigens to elicit an antitumor response. Nevertheless, therapeutic cancer vaccines are still considered as a way that fails to demonstrate clinical benefits. Indeed, in comparison to other newly developed immunotherapies like Immune Checkpoint Blockade (ICB) or CAR T-cell therapies, therapeutic vaccines still show only a few outcomes within the establishment of clinical responses in advanced cancer patients.

Vaccination is in-vivo immunotherapy requiring a lively host response. Vaccination for cancer treatment has been skeptically viewed, arising partially from difficulty demonstrating clear, consistent clinical responses. The system may be a network of organs, cells, and proteins that employment to guard our bodies from foreign invaders like infections. The system fights against pathogens like bacteria, viruses, parasites, and fungus that the body has been exposed to. The system also fights against cells already within the body that have changed thanks to illness, like cancer. White blood cells, also called leukocytes, hunt down these foreign pathogens and destroy them.

How to cite this article: Gordon. "Cancer Immunotherapy and Vaccine Treatment Strategies". *J Integr Oncol* 10 (2021): e125.

***Address for Correspondence:** Gordon, Department of oncology, Suez Canal University, Ismailia, Egypt, Tel: +33 01 56 25 55 00; E-mail:gordon.heor@ac.uk*

Received date: 02 April 2021; **Accepted date:** 19 April 2021; **Published date:** 26 April 2021