Abstract

There are few methods bringing several relatively recent advances in therapy of certain types of prostate cancer. Belonging to personalized therapies, they use cells (normal or pathologic) from the patient, modify and reintroduce them in the patient's body, leading to an increased efficiency against the neoplastic tissue, proving to increase the patient's lifespan and/or tumor progression.

Keywords: immunotherapy, prostate cancer treatment, lifespan, neoplastic tissue, gene therapy
a surgical (combined with chemo or radiotherapy) treatment, plus the ones with the hormone replacement therapy option.

**Oncolytic virus therapy**

By definition, it uses genetically modified viruses that can induce destruction of infected neoplastic cells, in this process generating also an immune antitumor response, greater than other therapies.

- ProstAtak (aglatimagene besadenovec) uses an inactivated herpetic virus to directly deliver a gene to cancer cells, followed by an anti-herpetic therapy with valacyclovir (Valtrex), killing the cells containing the gene. Currently, ProstAtak is undergoing phase III of clinical testing in patients with localized prostate cancer who also follow radiotherapy. There is also a phase II/III clinical trial using ProstAtak in patients with localized prostate cancer following only active surveillance (conservative management). Both studies have been started in September 2011 and are expected to be finalized in December 2019 [7,9].

**Adoptive Cell Therapy**

Another important branch of immunotherapy in prostate cancer is adoptive cell therapy. This involves the extraction of immune cells from the patient, modifying them genetically, or treating them with substances meant to enhance their activity, then reinserting them in the patient’s body, with the purpose of obtaining a better antitumor response [5,6].

- A phase II clinical trial uses genetically modified T cells in order to target NY-ESO-1, the prostate cancer specific antigen, administered together with a vaccine containing dendritic cells activated for NY-ESO-1, for a greater efficiency [7,9].

- A phase I clinical trial uses genetically modified NK (Natural Killer) cells [7,9].

**Adjuvant immunotherapies**

Are based on drugs that boost the immune antitumor response. They can be used alone or in combination with other immunotherapies [5,6].

- A phase II clinical trial uses Sipuleucel-T (Provenge) and Indoximod simultaneously, an indoleamine (IDO) pathway inhibitor in patients with refractory metastatic prostate cancer. The indoleamine (IDO) pathway is frequently active in tumors, and Indoximod is known to inhibit this pathway [5-9].

- A phase I clinical trial uses Mobilan (M-VM3), a toll-like receptor agonist [7,9].

**Monoclonal antibodies**

Monoclonal antibodies are molecules designed and made in the lab by genetic engineering, meant to target specific tumor antigens. Currently, a large number of monoclonal antibodies are undergoing clinical trials, some with promising results; yet these studies are still in the preliminary phases [5,6,9].

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