

# The Role of Oncolytic Therapy in Dealing with Melanoma †

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**Abstract:** Malignant melanoma is the most aggressive skin cancer, with an increasing incidence in the decades. It has a high metastatic potential, the diagnosis at this stage being associated with limited therapeutic resources and a 5-year survival rate below 30%. The current therapies for unresectable melanoma consist of radiotherapy, immunotherapy (anti-PD-1 and anti-CTLA-4 monoclonal antibodies), and targeted therapy (for BRAF-positive melanomas). These therapies are associated on the long term with rapid resistance, low survival rates, and numerous side effects. New clinical trials are being conducted to find effective treatment options for this category of patients. Oncolytic therapy is a recently FDA-approved therapy that involves using native or modified viruses for the targeted destruction of tumor cells. Oncolytic therapy was first approved in 2015 to treat unresectable metastatic melanoma, the only drug approved so far being T-Vec (thalimogen laherparepvec). This is a derivative of Herpes Simplex Virus 1 that contains GM-CSF molecules and that selectively penetrates only the tumor cells and destroys them by intratumoral replication. This therapy was associated not only with the growth stopping of the tumoral mass but also with an increase in survival of these patients, raising the idea of a possible system effect, despite local injection. Moreover, beneficial effects have been observed by its association with anti-PD-1 immunotherapeutic agents. These therapeutic combinations and other types of viruses available for oncolytic therapy are still in clinical trials, but the results are promising for the prognosis of advanced melanoma.

**Keywords:** metastatic melanoma; T-Vec; oncolytic therapy; virus.

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## **Conflicts of Interest**

The authors declare no conflict of interest.