

Researchers develop promising new treatment of advanced skin cancer

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Melanoma in skin biopsy with H&E stain—this case may represent superficial spreading melanoma. Credit: Wikipedia/CC BY-SA 3.0

A new type of immunotherapy for the skin cancer malignant melanoma shows promising results. Three severely ill patients are now long-term survivors. The study, published in *OncoImmunology*, is the result of a collaboration between researchers at Karolinska Institutet and Karolinska

University Hospital.

"Immunotherapy is based on activation of the body's own immune defense to eliminate [cancer cells](#). Immunotherapy achieved substantial progress, particularly when the treatment with immune-activating antibodies (Immune Checkpoint Inhibition, ICI) was introduced. This prolongs the survival of patients with advanced melanoma," says Maria Wolodarski, oncologist and researcher at Karolinska Institutet, who is the study's principal investigator and responsible for patient contact and recruitment.

James Allison and Tasuko Honjo were awarded the Nobel Prize in Medicine two years ago for the discovery which resulted in ICI treatment.

New Immunotherapy combination method

However, the majority of patients with advanced malignant melanoma do not respond to this or other types of treatment. It is this group that the research team has now treated with a new combination of two types of immunotherapy.

First, a special type of white blood [cells](#), T-cells, is extracted from the patient's own tumor. Those "Tumor Infiltrating Lymphocytes," TIL cells, are an important part of the body's immune defense against [cancer](#). The TIL are multiplied up to 50 billion cells and administered back to the patient in combination with a growth factor, Interleukin-2.

"What makes this study unique compared to other international clinical trials with TIL cells is that the patients are also treated with several doses of a tumor vaccine consisting of dendritic cells, DC, which specialize in activating the [immune system](#) and giving the injected TIL cells an extra boost," says Stina Wickström, researcher at the Department of Oncology-

Pathology at Karolinska Institutet, and responsible for coordinating production of the TIL cells and for the study's immune monitoring.

Other types of metastatic cancer

Of the four severely ill patients with malignant melanoma receiving treatment with this combination of TIL cells and DC tumor vaccine, three have responded with complete or near complete remission of the cancer. This has occurred in spite of the fact that the group no longer responds to other types of cancer treatment. They are long-term survivors who have had the disease for several years.

The five patients that have been treated with TIL cells alone did not have the same favorable response to the treatment as when the treatment was provided in combination with the tumor vaccine.

The method is part of Karolinska University Hospital's strengthening of cell therapy and Rolf Kiessling, head of the study, has applied to the Swedish Medical Products Agency for approval to also test the method on other types of metastatic cancer.

More information: Tanja Lövgren et al. Complete and long-lasting clinical responses in immune checkpoint inhibitor-resistant, metastasized melanoma treated with adoptive T cell transfer combined with DC vaccination, *OncoImmunology* (2020). [DOI: 10.1080/2162402X.2020.1792058](https://doi.org/10.1080/2162402X.2020.1792058)

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