Immunotherapy Highly Effective In Treatment Of Rare Skin Cancer, UCLA-Led Study Finds

In a UCLA-led study, with Drs. Antoni Ribas and Siwen Hu-Lieskovskova as co-corresponding authors, more than two-thirds of people with a rare type of melanoma responded positively to treatment with anti-PD-1 immunotherapies. The findings counter the conventional wisdom that a cancer which is highly fibrotic with dense stroma could not respond to immunotherapy, and have the potential to help scientists identify those patients most likely to benefit from treatment.

Desmoplastic melanoma is an uncommon subtype of melanoma proven highly resistant to traditional treatment approaches, such as chemotherapy, radiation and surgery. Desmoplastic melanoma tumors are characterized by dense tissue thought to limit the ability of immune cells to infiltrate and attack the cancer, as well as a lack of “driver” mutations, required for drug development and precision medicine strategies. This had previously led scientists to consider people with desmoplastic melanoma, and other dense cancers, unlikely to benefit from immunotherapy.

However, research has shown that anti-PD-1 antibodies, such as pembrolizumab and nivolumab, are effective for the treatment of some patients with advanced melanoma.

To respond to anti-PD-1 immunotherapy the cancer needs to be recognized as abnormal by the patient’s immune system, and the immune system cells need to be blocked by PD-L1, the ligand to PD-1. A higher level of mutations induced by sun damage in melanoma tumors allows the immune system to recognize melanoma cells as abnormal cells that should be attacked, which is associated with improved clinical outcomes.

In the study, the UCLA team hypothesized that despite the dense stroma associated with desmoplastic melanoma tumors, patients may still respond well to anti-PD-1 or anti-PD-L1 therapies because of the high frequency of mutations induced by previous sun damage characteristic of this type of cancer. They further sought to understand how DNA damage from ultraviolet light (which is a common result of sun exposure and highly associated with desmoplastic melanoma) and PD-L1 expression levels in tumor cells affect patient response to immunotherapy.