Resident T cells improve melanoma prognosis

Hands of an individual with vitiligo (James Heilman, MD, Wikimedia Commons)

Vitiligo is an autoimmune disease that causes pigment disfiguration in patients. Hair and skin colour is dependent on the production of melanin by melanocytes. With the destruction of melanocytes in vitiligo patients, patches of skin and hair lose their pigment and become white.

Vitiligo is not merely an aesthetic disease. Cancer patients who have vitiligo have a better prognosis, but the mechanisms behind this effect is not fully understood. In a study conducted by Malik *et al.*, researchers discovered a link between tissue resident memory (TRM) T cells and cancer immunity. Melanoma antigen-specific TRM T cells were found in patches of hair follicles that lacked melanocytes. These cells expressed CD103, CD69, and Cutaneous lymphocyte antigen (CLA)

and were able to produce interferon-γ (IFN-γ), a cytokine responsible for adaptive immune responses. They were also found to be self sustaining as they lacked programmed cell death protein-1 (PD-1) and lymphocyte activation gene-3 (LAG-3). While the TRM T cells were not recirculated by the lymphoid compartment, they were still maintained in the vitiligo-affected skin.

TRM T cells required CD103 expression for their initial establishment in the skin, but they were not necessary for vitiligo development. In turn, these CD103+ CD8 T cells gave the skin a durable immunity to melanoma in both unpigmented and pigmented skin. This study gives us some insight into how vitiligo protects individuals against melanoma and highlights the role of TRM T cells in long term anti-tumour immunity.

Malik *et al.,* 2017. Resident memory T cells in the skin mediate durable immunity to melanoma. *Science Immunology*

Article by Maxwell Chan