

Tumor-draining lymph nodes in ovarian carcinoma patients are dysfunctional

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Abstract

The lymphatic system involvement by solid tumors in the peripheral tissues is a hallmark of cancer and often reflects poor prognosis. Yet, they are strategically positioned at dedicated sites throughout the body to facilitate a rapid and efficient anti-tumor immune response. Emerging evidence suggests that tumor-specific adaptive immune responses occur in the tumor tissue, but the contribution of tumor-draining lymph nodes to this process is not clear. We studied tumor-draining lymph nodes from high grade serous ovarian carcinoma patients and found that the lymph nodes are disrupted and nonfunctional. Single cell sequencing and multiplex imaging techniques revealed that tumor draining lymph nodes in high grade serous ovarian carcinoma patients lack germinal centers and show negligible T and B cell clonal expansion. Thus, adaptive immune responses within tumors do not emerge from tumor-draining lymph nodes and their dysfunctionality might explain the lack of effect of immune checkpoint blockade therapy in this cancer. In future experiments, we aim to uncover the underlying molecular mechanism that impose lymph node dysfunctionality in patients.