Revisiting the role of type 1 conventional dendritic cells (cDC1) in cancer immunosurveillance

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Context and hypothesis:
Previous studies have suggested that conventional type 1 dendritic cells (cDC1) contribute to the immune control of tumors, either during cancer immunosurveillance or upon immunotherapy. However, these studies were based on animal models whose deficiencies were not confined solely to cDC1. Therefore, this project aims at rigorously investigating whether cDC1 are true cornerstones in cancer immunosurveillance.
Method:
We use unique mouse models to deplete either constitutively (Xcr1-DTA mice) or transiently (Karma and Xcr1-DTR mice) all cDC1 through the body, and to inactivate specific genes exclusively in cDC1 (Xcr1-cre mice). We use a breast adenocarcinoma model, which is spontaneously rejected after orthotopic implantation in C57BL/6 females.
Results:
We showed that cDC1 and type I interferon (IFN) are essential in promoting a protective CD8+ T cell (CTLs) response. We also showed that cDC1 depletion altered the immune landscape of the tumor, in particular the infiltration and activation of CTLs and CD4+ T cells. We now investigate how cDC1 interact spatiotemporally with antitumoral CTLs. We also aim at investigating whether cDC1 and type I IFN are part of the same protective functions, and the molecular signals critical for cDC1 to promote effective anti-tumoral T cell responses.
Conclusion:
Revisiting cDC1 functions in the context of natural and spontaneous immunity to cancer will undoubtedly help in defining new ways to mobilize cDC1 functions to improve immunotherapies currently applied in clinics to patients.

Keywords : conventional type 1 dendritic cells, cancer immunosurveillance, type I IFN, CD8+ T cells, CD4+ T cells
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