NK cells orchestrate the migratory behavior of conventional type 1 dendritic cells to potentiate T cell priming

---
Conventional dendritic cells (cDCs) are considered as purely dedicated in efficiently priming naive T cells. Conventional type 1 dendritic cells (cDC1) favor Th1 polarization, and efficiently prime cytotoxic CD8+ T cells by cross-presenting exogenous Ag. However how Ag-presenting cDC1 relocate in lymphoid organs to increase their chance of encountering naïve CD8+ T cells is not well understood. cDC1 can be identified by their selective expression of XCR1, whatever the tissues examined. The ligand of XCR1, XCL1 is expressed by cytotoxic lymphocytes such as natural killer (NK) cells or activated CD8+ T cells. Since XCL1/XCR1 is strongly conserved during evolution, we hypothesize that the XCL1/XCR1 axis may have a non redundant function in immune responses. We used mouse cytomegalovirus (MCMV) infection to investigate whether XCL1/XCR1 favors cDC1 crosstalk with NK cells in the spleen. To track cDC1 in situ, we have generated mouse models in which cDC1 are genetically targeted to express a fluorescent protein. We found that XCR1 expression on cDC1 potentiates IFN-γ production by NK cells, and expansion of the Ly49H+ subset of NK cells, which recognize MCMV-infected cells. Very early after infection, the XCL1/XCR1 axis efficiently promotes the migration of red pulp cDC1 toward NK cells in the marginal zone of the spleen, where MCMV replicates. Here the cDC1 and NK cells set up a particular molecular crosstalk, and NK cells provide guiding cues to cDC1, boosting their relocalization into the T cell zone where they prime rapidly and efficiently antiviral CD8+ T cell responses. Our study supports a model in which cDC1 migratory journey within a lymphoid organ is fully orchestrated by innate lymphoid cells. Moreover, it participates in understanding how NK cells accelerate CD8+ T cell effector functions in certain type of viral infections.

Keywords : cDC1, NK cells, XCR1, virus, migration
Authors :
References : , , ,

Authors

Karine Crozat 1, Sonia Ghilas 1, Marc Ambrosini 1, Jean-Charles Cancel 1, Marion Massé 1, Thien-Phong Vumanh 1, Hugues Lelouard 1, Marc Dalod 1,

1. CIML, MARSEILLE, FRANCE
2. CIML, Marseille, FRANCE