B cell-Stromal Cross Talk Drives Mesenteric Lymph Node Eosinophilia

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Abstract:

Inflammation-induced lymph nodes stromal remodeling promotes the immune cell trafficking and interaction towards driving the humoral response. Here we show that intestinal helminth infection led to an extensive expansion and remodeling of the stromal network present within the intestine draining mesenteric LNs (MLNs). We provide evidence that IL-4Ra signaling was required to promote stromal remodeling, niches expansion and proliferation as well as eosinophilia within the MLN. By static and deep tissue imaging we showed that eosinophils were present within the cortical and paracortical region and were associated with the lymphatic vessel, extrafollicular B cells and CD138 positive plasma cells. By using complete and mixed bone marrow chimera's experiments we were able to confirm that in mice lacking IL-4Ra expression selectively on B cells showed diminished eosinophilia and has reduced plasma cell numbers within the MLN which was directly associated with stromal remodeling. The reduced eosinophilia was directly associated with the reduced availability of eosinophil chemoattractant produced by MLN cells. Overall, these results highlight the novel role of IL-4Ra driven stromal niches expansion which regulates the size and cellular pool of MLN and in turn can regulate the quality and magnitude of humoral immune responses generated within MLN.