Decreased dendritic cell numbers but increased TLR9-mediated interferon-alpha production in first degree relatives of type 1 diabetes patients.

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Abstract

OBJECTIVE: Dendritic cells (DCs) play an important role in pathogenesis of autoimmunity, including type 1 diabetes (T1D). In this study, we investigated DC subpopulations and their responses to TLR stimulation in T1D patients and their relatives.

METHODS: We analyzed the frequency of myeloid (mDCs) and plasmacytoid DCs (pDCs) in 97 T1D patients (69 onset, 28 long-term), 67 first-degree relatives, and 64 controls. We additionally tested the IFN-alpha production by pDCs upon stimulation with TLR 7, 8 and 9 agonists.

RESULTS: A lower number of mDCs and pDCs were found in T1D patients and their relatives. Of all the tested TLR ligands, only stimulation with CpG 2216 induced IFN-alpha production that was the highest in T1D relatives, except of
autoantibody-negative relatives bearing the protective haplotypes.

**CONCLUSION:** Our data demonstrate disturbances in DC number and function expressed most significantly in T1D relatives and point to a potential role of TLR9-induced IFN-alpha production in T1D development.


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