Type 1 Diabetes Onset: a story of innate and adaptive immune cells?

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INTRODUCTION

• Type 1 diabetes (T1D) is a T cell-mediated autoimmune disease.
• A more complex immunological picture is being unravelled, with a key role of innate immune cells at disease onset and maintenance.
• For new therapies based on immune-modulation to be possible, immune characterization of T1D patients is crucial.

OBJECTIVE

• To characterize innate and adaptive immune cells of T1D children at a well-defined “onset-window” of disease, and to correlate with the metabolic status of patients at this stage.

RESULTS

N=41
Age: 9 ± 3 (mean±sd), 1-16 y
20/41 males

Characterization at disease onset

Children with T1D presented significantly different immune cell populations profile, compared to controls:
• higher T and B cell percentages;
• within T cells, decreased Th17 and Tc17 cells;
• lower NK cells;
• Lower monocytes.

Relation to HbA1C

compared to low-HbA1c and controls, significantly reduced peripheral blood
• neutrophils
• Th17 and Tc17

CONCLUSIONS

• Both innate and adaptive immunity are involved in T1D pathogenesis
• The lower circulating innate cells (NK cells, monocytes) and IL17-producing cells may reflect increased migration of these cells to pancreatic tissue at this stage.
• Longer and more severe pre-clinical hyperglycemic patients might be the ones with more severe insulitis at disease onset (with more intense migration of inflammatory cells from the periphery)
• Moreover, glucotoxicity effect on innate and adaptive immunity cannot be overlooked.
• The similar pattern of Th17 and neutrophils profile confirm the intimate relation of these cell populations in organ specific inflammatory processes
• Our data point toward a relevant role of neutrophils and IL17-producing cells as part of future strategies in immune modulation.
• In vivo imaging techniques emerge as a key tool to integrate peripheral findings and pancreatic inflammation.


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