CD5 expressing CD8+ T cell subsets differ between children with Type 1 Diabetes and controls

Josefine Wadenpohl[1], Julia Seyfarth[1], Paul Hehenkamp[1], Maximilian Hoffmann[1], Sebastian Kummer[1], Christina Reinauer[1], Carsten Döing[1], Katharina Förtsch[1], Ertan Mayatepek[1], Thomas Meissner[1], and Marc Jacobsen[1]

[1]Heinrich-Heine-Universitat Dusseldorf

February 15, 2021

Abstract

Different lymphocyte subsets are involved in autoimmune pathogenesis of Type 1 Diabetes (T1D). Previous studies suggested a role of CD5 expressing T and B cells including rare unconventional lymphocytes with combined T- and B-cell features (DE cells). We performed algorithm-supported multi-parameter flow cytometry and quantitative PCR to investigate immune cell subsets and DE cells in children with T1D (n=20) and matched controls (n=20). Comparisons of conventional immune cells detected increased proportions of CD3+ T cells in T1D patients whereas CD19+ B cell proportions were comparable to controls. Self-organizing maps for flow cytometry analyses (FlowSOM) showed highly similar CD5 expressing B-cell subsets and no differences for DE cells were detected between the study groups by flow cytometry or specific quantitative PCR. Notably, differences in CD8 positive T cells were indicated by FlowSOM and similarity-based tSNE analyses. Study group comparison confirmed significantly reduced CD8+ T-cell proportions with moderate or low CD5 expression in T1D patients. Finally, In vitro experiments showed stable CD5 expression differences of CD8+ T cells after T-cell activation, cytokine stimulation and culture. We observed differences of T-cell co-receptor CD5 expression in T1D patients with potential relevance for immune regulation of CD8+ T-cell activation.

Hosted file

`Wadenpohl_et_al_final.pdf` available at https://authorea.com/users/395899/articles/508991-cd5-expressing-cd8-t-cell-subsets-differ-between-children-with-type-1-diabetes-and-controls