DIABETOLOGY & METABOLIC SYNDROME

MEETING ABSTRACT Open Access

Phenotype of regulatory T cells in human type 1 diabetes at diagnosis and partial remission phase

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Background

Human type 1A diabetes (T1AD) has a broad spectrum of clinical presentations, which may be associated with the severity of autoimmune response and consequently, different levels of pancreatic beta cells destruction. The T1AD presents a partial remission phase. The remission phase is classically a short period in childhood-onset diabetes, but longer periods may occur especially in young.

Objective

This study was designed to investigate cellular immunity focusing regulatory T-cells (Tregs) in different disease stages of the disease.

Materials and methods

A total of 13 T1AD patients: 8 newly-diagnosed T1AD (age: 7.9±6.3 yrs., insulin dose: 0.5 U/kg/day) within 1.0 ±0.9 months of their diagnosis, 5 in partial remission, for 1.2±1.0 yrs. after diagnosis (age: 10.8±6.8 yrs., insulin dose: 0.2 U/kg/day) and 9 healthy controls (21.9±2.7yrs.) were studied. Phenotypic analysis of Tregs was performed by flow cytometry on peripheral blood. After a Lyse/Wash protocol, cells were stained for CD4, FoxP3, CTLA4, CD25. T cell markers CD25, CTLA-4 and FoxP3 were examined on cells within the CD4 gate. Groups were compared using an one-way ANOVA test.

Results

The frequency of circulating CD4+CD25+ and CD4+FoxP3 + T cells was significantly reduced in newly-diagnosed T1AD compared to patients in partial remission and controls (1.7±0.6% vs 4.0±2.1% vs 3.3±1.2%, $p<0.01$ and 0.7 ±0.7% vs 2.0±2.0% vs 2.3±0.8%, $p<0.03$ respectively).

Conclusions

These preliminary data showed decreased peripheral Tregs frequency in classical childhood-onset T1AD. In contrast, the group of long-term remission patients had similar frequency to controls and some of them presented latent autoimmune diabetes features. Immunophenotyping at the time of diagnosis and during follow-up may help the definition of both T1AD clinical subtypes and remission period.

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