High frequency of antibodies to IA-2 in patients diagnosed with Type 1 diabetes in Singapore

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Aims:

The incidence of Type 1 diabetes is substantially higher in Northern Europe than in Asia and this variation in disease incidence may be linked to differences in autoimmune responses to islet antigens such as proinsulin, glutamate decarboxylase (GAD65), IA-2, zinc transporter-8 (ZnT8) or the recently described autoantigen, tetraspanin-7 (Tspan7). The aim of this study was to compare the relative frequencies of antibodies to GAD65, IA-2, ZnT8 and Tspan7 in children and young adults recently diagnosed with Type 1 diabetes in Europe and Asia.

Methods:

Sera were obtained from patients with Type 1 diabetes aged 1-24 years from Germany and Singapore. Sera from non-diabetic subjects were used to establish autoantibody cut-offs. Samples were analysed for antibodies to GAD65, IA-2, ZnT8 and Tspan7 by luminescence immunoprecipitation assays.

Results:

Caucasian patients had high frequencies of autoantibodies to GAD65 (72%), IA-2 (76%), ZnT8 (69%) and Tspan7 (67%). Patients from Singapore had significantly lower frequencies of antibodies to GAD (34%), ZnT8 (44%) and Tspan7 (31%,) whereas antibodies to IA-2 were found at a similar frequency (73%) to that observed in Caucasian patients. Analysis of Tspan7 antibodies increased the proportion of Caucasian patients with 3 or more antibodies from 43.6% to 66.3% and doubled the proportion of Asian patients with 3 or more antibodies (15% to 30%).

Conclusions:

Antibodies to IA-2 represent important markers for Type 1 diabetes in both Europe and Singapore. Inclusion of Tspan7 antibodies is expected to assist the evaluation of disease risk when determined by presence of multiple autoantibodies.