00459 High Prevalence of IA-2 Antibodies in Singaporean Adult-onset Diabetic Subjects as Determined by a Fluid-phase Luciferase Immunoprecipitation Assay System (LIPS)

Bernhard Boehm[1], Koh Wei Choon Alvin[1], Rosi Chelliah[1], Lim Su Chi[2], Rinkoo Dalan[3], Chew Ek Kwang Daniel[3], Tai E Shyong[4]

[1]Nanyang Technological University, [2]Khoo Teck Puat Hospital, [3]Tan Tock Seng Hospital, [4]National University Health System

Aims: The characteristic of latent autoimmune diabetes in adults (LADA), frequently confused with type 2 diabetes, is the presence of anti-glutamic acid decarboxylase (GAD) antibodies. The most sensitive test for the diagnosis of LADA is the presence of GADA and in some cases of anti-IA-2 antibodies as determined by radioactive radioimmunoassay (RIA), the de facto gold standard method. In subjects with adult-onset diabetes, GADA and IA-2A were measured with standard RIA technology and an alternative, non-radioactive technique, namely a luciferase-based immunoprecipitation system (LIPS). The aim of study was a comparison of the two assays and evaluation of GADA/IA-2A prevalence.

Methodology: We measured IA-2A and GADA in a representative population of 1,600 patients with adult-onset diabetes, aged between 20 and 75 years, recruited in tertiary healthcare centres (4 hospital centres in Singapore, 1 hospital centre in Germany).

Result: LIPS and RIA assays revealed good concordance of antibody titres [Spearman; r^2 = 0.877 (GADA) and 0.784 (IA-2A), respectively]. Prevalence of GADA positivity was 10.9% (95%-CI: 9.1 - 11.2; p<0.001) for LIPS as compared to 10.0% (95%-CI: 8.3 - 11.0; p<0.001) for RIA. IA-2icA positivity for LIPS was 17.8% (95%-CI: 15.9 - 19.4) compared to 17.1% (95%-CI: 15.2 - 18.7; p<0.001) for RIA. There was 8.3% and 5.8% percent error in GADA and IA-2A results when considering RIA as the de facto gold standard providing true autoantibody values. The discrepancy was due to more positive results seen overall with LIPS at borderline autoantibody levels.

Conclusion: Presence of GADA and IA-2A could be defined with high concordance with the nonradioactive LIPS method. IA-2A and not GADA were the most prevalent islet-cell autoantibody found in adult-onset diabetic subjects in Singapore. Presence of a robust non-radioactive assay system may enable a more comprehensive evaluation of diabetic subjects for the presence of immune-mediated diabetes.