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Health Care: Current Review

Immunogenetic study of diabetes mellitus in relation to HLA DQ and DR and to find out the prevalence of anti-GAD and anti-islet antibody

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Abstract

Introduction: In India, early onset diabetes constitutes about 1%–4% of the total diabetic population. The insulitis as well as humoral B-cell response with production of antibodies to IAA, GAD and the protein tyrosine phosphatase IA2 is the main pathogenesis of T1DM. HLA-DR and DQ contributes approximately 40%–50% of the inherited susceptibility for T1DM and most frequently involved haplotypes are DRB1*0301-DQB1*0201, DRB1*0301-DQA1*0501.

Method and Material: The study included 70 cases of DM, 25 healthy controls and 30 cases of complicated DM. HLA- DQB1 and DRB1 were done by sequence specific PCR method. Indirect immunofluorescent test was used for anti-GAD antibody. Statistical analysis done by SPSS version-16.

Results: HLA DRB1*03010 were significantly more in diabetic patient (P < 0.011) as compared to control. DRB1*O403/6 and DQB1*0201 (p value <0.004) was significantly high in DM patient as compared to control with a relative risk of 1.08 and 1.68 respectively. In type-I DM, DRB1*03010 was significantly high (P = 0.009) with a relative risk of 2.78 as compared type-II DM. In DQ typing, DQB1*0201 was significantly high in type-I DM in comparison to type-II DM (65% vs. 30%, P = 0.026, RR = 2.05). DQB1*0201 was significantly high in type-I DM as compared to healthy control (P = 0.0003, RR = 3.09). In type-I DM patient's homozygosity at DRB1*03010, DRB1*03010 was significantly high as compared to the control (P < 0.047, RR = 2.33). DRB1*03010 was positive in 77.7% anti-GAD antibody positive cases. Similarly, in DQB1 typing, 66.6% anti-GAD positive cases have DQB1*0201.

Conclusion: HLA DRB1*3010 and HLA DQB1*0201 were the most susceptible and HLA DRB1*14 and HLA DRB1*15 were the protective haplotypes for type-I DM. Susceptibility increases for homozygosity for DRB1*03010. Diagnostic efficacy for T1 DM increase from 40.9% to 83% if DRB1 and DQB1 typing is added with anti-GAD antibody.

Biography

Gyanendra Singh completed his MD Pathology from Institute of Medical Sciences, BHU, Varanasi India, which is one of the prestigious medical colleges in India. He also completed his three-year senior residency and one year fellowship. He completed his research in field of diabetes. He developed this approach based on his years of experience working in hospitals and educational institutions in research, evaluation, teaching, and administration.

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