

Association of Type 2 Diabetes Mellitus and Glutathione S Transferase (GSTM1 and GSTT1) Genetic Polymorphism

Purpose: Glaucoma, the second leading cause of blindness, is characterized by **Background:** Oxidative stress, arising as a result of an imbalance between free radicals and anti-oxidant defenses, is associated with damage to lipids, proteins and nucleic acids, which could contribute to cellular dysfunctions leading to the pathophysiology of various diseases including atherosclerosis, cancer and diabetes mellitus. Glutathione S-transferases (GSTs) belong to a group of multigene and multifunctional detoxification enzymes, which defend cells against a wide variety of toxic insults. An important condition affecting GST expression is oxidative stress, usually observed in diabetes. **Aim:** To assess whether the glutathione S-transferase T1 (GSTT1) and M1 (GSTM1) genotypes are associated with type 2 diabetes mellitus and to ascertain whether the levels of blood lipids given exposure to diabetes are modified by the specific genetic polymorphisms of GSTT1 and GSTM1. **Subjects and Methods:** Using a multiplex polymerase chain reaction, GSTT1 and GSTM1 gene polymorphisms were analyzed in 29 patients with type 2 diabetes mellitus compared to 16 healthy age and sex matched control group. The association between genotypes and blood lipids were assessed separately for all the study subjects (type 2 diabetes mellitus group and the control group) with GSTT1 null and also for GSTM1 null compared to GSTT1 present and GSTM1 present genotypes respectively. **Results:** The proportion of GSTT1 null genotypes was higher in diabetic patients as compared to controls (17.24% versus 6.25%). No significant difference of the frequency of GSTM1 null was observed between cases and controls (58.6% versus 62.5%). The GSTT1 present genotype conferred a statistically significant 0.39 fold reduction in risk of type 2 diabetes mellitus relative to the null genotype of the GSTT1 genotype but the GSTM1 genotype did not differ with respect to their association with risk of type 2 diabetes mellitus. Among individuals with GSTT1 null and GSTM1 null, the serum cholesterol, triglycerides and high density lipoprotein were not significantly different from GSTT1 present or GSTM1 present genotypes. **Conclusion:** GSTT1 gene polymorphisms may play an important role in type 2 diabetes mellitus pathogenesis. The potential role of GSTM1 polymorphism as a marker of susceptibility to type 2 diabetes mellitus needs further studies in a larger number of patients. GSTT1 and GSTM1 null genotype do not have an effect on blood lipids.