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Association of Glutathione S-transferase M1 and T1 Gene Polymorphisms with Vitiligo in Saudi Population

Authors : Ghaleb Bin Huraib, Fahad Al Harthi, Mohammad Mustafa, Abdulrahman Al-Asmari

Abstract : Introduction: Vitiligo is an acquired pigmentary skin disorder with the regional disappearance of melanocytes. Vitiligo affects 0.1 to 2% of the global population, and the incidence varies substantially depending on ethnicity. Glutathione S-transferase (GST) is a multigene family of enzymes that detoxify oxidative stress products. The oxidative stress-related GSTM1/GSTT1 genes deletion may cause epidermal melanocytes destruction and the development of vitiligo. Hence, the present study aimed to investigate the association of GST gene polymorphisms with vitiligo in the Saudi population, if any. Materials and Methods: The present study includes 129 vitiligo cases and 130 age-matched healthy controls. The proportion of male and female patients with vitiligo is almost equal. The multiplex polymerase chain reaction (PCR) method was used for polymorphic analysis. Results: Increased odds of generalized vitiligo was observed with the null genotypes of GSTT1- gene (OR = 1.91, 95% CI = 1.07-3.42, p = 0.019). The possible genetic combinations of GSTM1/GSTT1 and their genotypic distribution showed the frequency of GSTM1+/GSTT1+ 62/130 (47.69%) and GSTM1-/GSTT1+ 52/130 (40.00%) were higher in controls than in cases 44/129 (34.11%), 43/129 (33.34%), respectively while GSTM1+/GSTT1- and GSTM1-/GSTT1- null genotypes were higher 22/129 (17.05%) and 20/129 (15.50%) in vitiligo patients as compared to controls 11/130 (8.46%), 5/130 (3.84%), respectively. The strength of association of different genetic combinations with cases have shown GSTM1+/GSTT1- (OR = 2.81, 95% CI = 1.24-6.40, p = 0.009) and GSTM1-/GSTT1- (OR = 5.63, 95% CI = 1.96 - 16.16, p = 0.0004) were significantly higher in vitiligo cases as compared to controls. We did not observe any significant association of age and gender of patients with GST gene polymorphisms. Conclusions: The GSTT1-, GSTM1+/GSTT1- and GSTM1-/GSTT1- null genotypes were significantly associated with vitiligo. These genetic polymorphisms may be the associative genetic risk factor for vitiligo among Saudis. It could be used as a genetic marker for screening vitiligo patients among Saudis. Further studies on GSTs gene polymorphism in larger sample sizes from different geographical areas and ethnicity are needed to strengthen the present findings.

Keywords : vitiligo, GSTM1, GSTT1, gene polymorphism, oxidative stress
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