Rsal but not Dral polymorphism in CYP2E1 gene increases the risk of gastrointestinal cancer in Malaysians: A case control study

Abstract

Objectives: Our study aimed to investigate the association of CYP2E1 C-1019T Rsal and T7678A Dral polymorphisms and factors such as age, gender and ethnicity to the risk of gastrointestinal cancer (GIC) in Malaysians. Design: Case-control study. Setting: Malaysia. Participants: 520 consented healthy blood donors with no previous GIC record and 175 patients with GIC. Measurements: C-1019T Rsal and T7678A Dral genotyping of CYP2E1 gene; direct sequencing. Results: This study reveals that the variant c2 allele and carrier with at least one c2 allele of C-1019T single nucleotide polymorphism (SNP) significantly increased the risk of GIC but no significant association was found between T7678A SNP and combined analysis of C-1019T and T7678A SNPs to risk of GIC. The Malaysian Chinese had greater risk of GIC compared with the Malays, Indians and KadazanDusun. An increased risk of GIC was observed in individuals aged >40 years and women had a 2.22-fold and 1.58-fold increased risk of stomach and colorectal cancers, respectively, when compared with men. Limitations: The future research should be conducted with a larger sample population and including the gene-gene and gene-environmental interactions. Conclusions: Our study suggests that the rare c2 allele and carrier with at least one c2 allele of CYP2E1 Rsal polymorphism significantly elevated the risk of GIC and may be used as a genetic biomarker for early screening of GIC in Malaysians. The risk age-group has been shifted to a younger age at 40s and women showed a significant greater risk of stomach and colorectal cancers than men.