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Cytochrome P1B1 (CYP1B1) polymorphisms and cancer risk: a meta-analysis of 52 studies.

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Abstract

CYP1B1 plays a critical role in the oxidative metabolism of a variety of exogenous compounds, including carcinogenic compounds, which may be activated during metabolism. There are only a few studies that have examined the association between the two polymorphisms and cancer, and that these studies have been inconclusive. Hence, the aim of the present meta-analysis was to evaluate the relationship between polymorphisms in CYP1B1 G119T and A453G and cancer risk. We performed a detailed search using the PubMed and EMBASE libraries to obtain all relevant published reports on the relationship between the G119T and A453G polymorphisms in CYP1B1 and cancer risk. Combined odds ratios (ORs) and corresponding 95% confidence intervals (CIs) were calculated by Stata version 11.2. We conducted stratified analyses based on cancer types, ethnicity, source of controls, and quality assessments. We also made assessments of heterogeneity tests, sensitivity analyses, and publication bias. There were a total of 25 articles with 15,376 cases and 18,382 controls concerning CYP1B1 G119T and 40 articles with 27,983 cases and 35,839 controls concerning A453G polymorphisms. Regarding G119T, the combined results indicate that the variant genotypes were significantly associated with a slightly increased cancer risk in comparison to the homozygote (TT versus GG: p=0.006, OR=1.231, 95% CI: 1.061-1.428), especially for breast cancer and prostate cancer. Moreover, significantly increased associations with cancer risk were demonstrated in Asians in all genetic models. The combined results indicated no association of A453G with cancer risk; however, an association was observed specifically for prostate cancer. This meta-analysis suggests that the CYP1B1 G119T polymorphism may confer to genetic susceptibility to cancer in Asians, especially to breast cancer and prostate cancer. The A453G polymorphism was found to modify the risk of prostate cancer.

KEYWORDS: CYP1B1; Cancer; Meta-analysis; Polymorphism

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