Afr J Tradit Complement Altern Med. 2016 Aug 12;13(5):72-86. doi: 10.21010/ajtcam.v13i5.11. eCollection 2016.

ASSOCIATION OF MTHFR A1298C POLYMORPHISM WITH BREAST CANCER AND/OR OVARIAN CANCER RISK: AN UPDATED META-ANALYSIS.

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Abstract

BACKGROUND: Recent years have witnessed the discovery of similar gene variations between breast cancer and ovarian cancer, inherited breast and ovarian cancer in particular. A large number of case-control studies have been conducted to explore the association of Methylenetetrahydrofolate Reductase (MTHFR) A1298C polymorphism with breast cancer and/or ovarian cancer risk. However, the results are still inconsistent and inconclusive. Consequently, we performed a meta-analysis to evaluate the association between MTHFR A1298C polymorphism and breast, ovarian cancer risk.

MATERIALS AND METHODS: A comprehensive retrieval was conducted in the electronic database of PubMed, Web of Science and Chinese National Knowledge Infrastructure (CNKI) until June 2015 to identify eligible studies. A total of 35 studies which examined the association of MTHFR A1298C polymorphism with breast cancer and/or ovarian cancer were identified. The pooled odds ratios (ORs) with 95 % confidence intervals (CIs) were used to assess the effect of gene polymorphism. And allele model, homozygous model, co-dominant model, dominant model, recessive model were applied.

RESULT: In the overall analysis, significantly increased breast cancer and/or ovarian cancer risk was found (for allele model A VS C OR = 1.05, CI: 1.02-1.08, P = $4\chi10^{-3}$; for homozygous model AA VS CC OR = 1.11, CI: 1.03-1.19, P = $5\chi10^{-3}$; for recessive model (AC +AA) VS CC: OR = 1.10, CI: 1.03-1.18, P = $7\chi10^{-3}$).

CONCLUSION: In the subgroup analysis, significantly increased breast cancer risk was identified among Caucasians. MTHFR A1298C polymorphism might contribute to an increased risk of breast cancer and/or ovarian cancer susceptibility. In addition, MTHFR A1298C polymorphism had a significant association with breast cancer in Caucasians.

KEYWORDS: Breast cancer; MTHFR A1298C; Meta-analysis; Ovarian cancer; Polymorphism

PMID: 28487897 PMCID: PMC5416649 [Available on 2017-08-12] DOI: 10.21010/ajtcam.v13i5.11