GMR Genetics and Molecular Research
Online Journal
ISSN:1676-5680

Clinical significance of *SHMT1* rs1979277 polymorphism in Asian solid tumors: evidence from a meta-analysis

T.T. Zhao[1]*, L.L. Shen[1]*, X.L. Zhang[2]*, D.Y. Gu[1], Q. Zhang[1], X.Y. Huo[1], C.J. Tang[1] and J.F. Chen[1]

[1]Department of Oncology, Nanjing First Hospital, Nanjing Medical University, Nanjing, China
[2]Department of Oncology, Nantong Tumor Hospital, Nantong, China

*These authors contributed equally to this study.
Corresponding author: J.F. Chen
E-mail: jinfeichen@sohu.com

Genet. Mol. Res. 14 (2): 5602-5614 (2015)
Received July 31, 2014
Accepted January 19, 2015
Published May 25, 2015
DOI http://dx.doi.org/10.4238/2015.May.25.12

ABSTRACT. Published data regarding the association between the cytosolic serine hydroxymethyltransferase (*SHMT1*) C1420T (Leu474Phe) polymorphism and solid tumor risk have shown inconclusive results. To derive a more precise estimation of the relationship, we performed a meta-analysis of 23 published studies that included 14,409 cancer cases and 16,996 controls. A comprehensive search was conducted to identify all eligible studies of the *SHMT1* rs1979277 polymorphism and solid tumor risk. The pooled odds ratios (ORs) and the 95% confidence intervals (95%CIs) were calculated using a fixed- or random-effects model. Heterogeneity was represented by P_H; publication bias and sensitivity analysis were also explored. Overall, no significant associations were found for any genetic models tested. However, upon stratification by cancer type, a significant decreased risk of breast cancer risk was identified in the homozygote comparison (OR = 0.79, 95%CI = 0.65-0.97 for TT versus CC). An analysis stratified

by ethnicity and source of controls revealed an obvious decrease in risk among Asian groups in all genetic models, and among population-based controls only in the homozygote comparison and recessive model. Therefore, our meta-analysis suggested that the *SHMT1* C1420T polymorphism was associated with decreased risk of breast cancer. Significant protective effects were found among Asian populations, but not in Caucasian groups. Due to some minor limitations, our findings should be confirmed by further studies.

Key words: Cancer; Single nucleotide polymorphism; Meta-analysis; Cytosolic serine hydroxymethyltransferase C1420T

