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Methylenetetrahydrofolate Reductase (MTHFR) C677T Polymorphism and Alzheimer Disease Risk: a Meta-Analysis.

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Abstract

Methylenetetrahydrofolate reductase (MTHFR) is key enzyme of folate/homocysteine pathway. Case control association studies on MTHFR C677T polymorphism and Alzheimer's disease (AD) have been repeatedly performed over the last two decades, but the results are inconclusive. The aim of the present study was to assess the risk of MTHFR C677T polymorphism for AD. Forty-one studies were identified by a search of PubMed, Google Scholar, Elsevier, and Springer Link databases, up to January 2015. Odds ratios (ORs) with corresponding 95 % confidence interval (CI) were calculated using fixed effect model or random effect model. The subgroup analyses based on ethnicity were performed. MTHFR C677T polymorphism had a significant association with susceptibility to AD in all genetic models (for T vs C OR = 1.29, 95 % CI = 1.07-1.56, p = 0.003; for TT + CT vs CC OR = 1.29, 95 % CI = 1.19-1.40, p = 0.0004; for TT vs CC OR = 1.31, 95 % CI = 1.16-1.48, p = 0.001; for CT vs CC OR = 1.24, 95 % CI = 1.13-1.35, p < 0.004; and for TT vs CT + CC OR = 1.13, 95 % CI = 1.00-1.28, p = 0.02). Results of present meta-analysis supported that the MTHFR C677T polymorphism was associated with an increased risk of AD.

KEYWORDS: Alzheimer's disease; C677T; Folate; Homocysteine; MTHFR; Neurodegeneration

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