

Abstract

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Associations between the C677T and A1298C polymorphisms of MTHFR and the efficacy and toxicity of methotrexate in rheumatoid arthritis: a meta-analysis.

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BACKGROUND AND OBJECTIVE: The C677T and A1298C polymorphisms of the methylenetetrahydrofolate reductase (MTHFR) gene have been reported to be associated with the toxicity and efficacy of methotrexate in rheumatoid arthritis (RA), although the results of previous studies have been inconsistent. The aim of this study was to explore whether the C677T and A1298C polymorphisms of MTHFR play a role in the toxicity and efficacy of methotrexate in RA.

METHODS: The authors identified and evaluated studies conducted on the association between the C677T and A1298C polymorphisms of MTHFR and on the toxicity and efficacy of methotrexate in RA. A meta-analysis was then conducted to compare the toxicity and efficacy of methotrexate with respect to the 677CC and 677CT/TT genotypes and the 1298AA and 1298AC/CC genotypes.

RESULTS: Eight studies, which included a total of 1514 patients with RA, were included in this meta-analysis. Meta-analysis did not show any association between the C677T and A1298C polymorphisms of MTHFR and the toxicity of methotrexate in RA in all patients or in Asian patients. The odds ratios (ORs) for adverse effects with 677CC versus 677CT/TT in all patients and in Asian patients were 0.633 (95% CI 0.325, 1.234; $p = 0.180$) and 0.621 (95% CI 0.233, 1.655; $p = 0.341$), respectively. The ORs for adverse effects with 1298AA versus 1298AC/CC in all patients and in Asian patients were 0.942 (95% CI 0.479, 1.851; $p = 0.861$) and 0.978 (95% CI 0.569, 1.681; $p = 0.936$), respectively. Heterogeneities were evident among the included studies. In addition, no association was found between the C677T and A1298C polymorphisms and the efficacy of methotrexate in RA in all patients.

CONCLUSIONS: Our meta-analysis including 1514 patients with RA found no association between the C677T and A1298C polymorphisms of MTHFR and the toxicity and efficacy of methotrexate in RA. Because of the paucity of pharmacogenetic data, further studies are needed to determine the role of MTHFR polymorphisms in the toxicity and efficacy of methotrexate.

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