Pediatric Rheumatology

Poster presentation

MTHFR polymorphism and red cell folate levels are not useful as biomarkers of methotrexate efficacy and toxicity in children with juvenile idiopathic arthritis

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Introduction

In adults with rheumatoid arthritis several polymorphisms of C677T genotype (CT and TT) were associated with increased toxicity and higher methotrexate (MTX) efficacy. Homozygote CC polymorphism of A1298C genotype was associated with toxicity.

Aim

To evaluate usefulness of MTHFR polymorphism and folate concentration assessment for prediction of toxicity and efficacy in children with juvenile idiopathic arthritis (JIA). To test association between MTHFR polymorphism and MTX polyglutamate concentration in erythrocytes (EMTX).

Patients and methods

In 46 MTX treated children with JIA C677T and A1298C polymorphisms of MTHFR, red cell folate (<800 nmol/l vs. >800) and erythrocyte EMTX concentration were studied using previously described methods.

Results

The prevalence of CT and TT genotype was 37 and 13%, distribution of AC and CC alleles 43 and 9%, respectively. MTX toxicity was noticed in 41% of children (GI complaints, raised transaminases, alopecia). 66% of patients were classified as MTX responders. Folate concentration was below 800 nmol/l in 28%. Presence of neither of MTHFR polymorphisms correlated with side effects (p = 0, 71, χ^2 test), clinical efficacy (p = 0, 18, χ^2 test), quartiles of EMTX (p = 0, 33) or folate concentration (p = 0, 71).

Conclusion

We have not found MTHFR polymorphism assessment helpful as a biomarker for prediction of clinical efficacy or toxicity in children with JIA. We have shown absence of association of MTHFR genotype with efficacy of MTX therapy.