

MTHFR (methylenetetrahydrofolate reductase) C677T polymorphism and psoriasis

Vladimir Vasku, Julie Bienertova-Vasku, Miroslav Necas and Anna Vasku

Abstract

The aim of the study was to evaluate possible association of MTHFR C677T gene polymorphism (NM_005957) with psoriasis. Genotypes of MTHFR C677T gene polymorphism were determined in a sample of 654 Caucasian (Czech) subjects. Case group ($n = 410$) included patients with psoriasis (plaque psoriasis diagnosed in 285 patients, other subtypes of psoriasis were observed in 125 patients). Control group ($n = 244$) consisted of healthy subjects without individual history of psoriasis, with similar age and gender characteristics. The MTHFR C677T polymorphism genotypes were determined by a polymerase chain reaction and a subsequent restriction analysis with *Hinfl*. The genotypes of C(677)T methylenetetrahydrofolate reductase (MTHFR) gene polymorphism were determined in a sample of 654 Caucasian (Czech) subjects. We proved a significant difference in genotype distribution ($P_g = 0.03$) and allelic frequency ($P_a = 0.02$) between psoriatic and control subjects (Table 3). The CC (the thermostabile) genotype was significantly more frequent in psoriatic patients compared to controls [OR = 1.55, 95% confidential interval (CI) = 1.12-2.15, $P = 0.004814$, $P_{corr} = 0.01$]. But, a significant increase of T allele in MTHFR gene was observed in patients with positive family history of diabetes ($P_a = 0.02$) and in those with a frequent tonsillitis/tonsillectomy ($P_a = 0.04$). No difference was observed between patients with and without positive family history of psoriasis ($P_a = 0.251$). But, when psoriatic patients were described for FHDM, FH-Ps, and PH-T simultaneously, The highest incidence of CT + TT genotypes was calculated for psoriasis patients with positive history of psoriasis and diabetes mellitus together with personal history of repeated tonsillitis/tonsillectomy compared to patients without all these three phenotypes (odds ratio = 3.17, 95% CI 1.33-7.56, $P_{corr} = 0.04$). In conclusion, MTHFR C677T polymorphism is marginally associated with psoriasis. The T allele (thermolabile) appears to be more frequent in psoriasis patients with positive history of psoriasis and diabetes mellitus together with personal history of repeated tonsillitis/tonsillectomy. This could reflect an inborn predisposition in complex regulation in one-carbon moieties transport in psoriatic patients and therefore, MTHFR genotype can be a part of genetic background of psoriasis.

Keywords MTHFR - Polymorphism - Psoriasis - Folate - DNA methylation