Correlation between *MTHFR* gene methylation and pre-eclampsia, and its clinical significance


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**ABSTRACT.** We investigated the correlation between 5,10-methylenetetrahydrofolate reductase (MTHFR) gene methylation and pre-eclampsia, and its clinical significance, by comparing methylation in the *MTHFR* gene promoter of the placenta and peripheral venous blood in pre-eclampsia and normal gravidas. We enrolled 259 gravidas from the People’s Liberation Army 202nd Hospital, China, between January 2011 and September 2011, including 127 pre-eclampsia and 132 normal gravidas. Methylation levels of the *MTHFR* gene in placentas in two sets of gravidas were detected by methylation-specific polymerase chain reaction, plasma homocysteine levels were detected by enzyme-linked immunosorbent assay, and folic acid and vitamin B12 levels were detected by electrochemiluminescence. The chi-square test results were analyzed using the SPSS19.0 statistical software. In placentas, the methylation indices were 26.8% (34/127) and 15.2% (20/132) in the pre-eclampsia and normal groups, respectively ($\chi^2 = 5.30$, $P < 0.05$, odds ratio (OR) = 2.04, 95% confidence interval (95%CI) = 1.10-3.73). In peripheral venous blood, the methylation indices were 22.8% (29/127) and 12.1% (16/132) in pre-eclampsia and normal groups, re-
spectively ($\chi^2 = 5.17$, $P < 0.05$, OR = 2.15, 95%CI = 1.11-4.15). The plasma methylation level of the pre-eclampsia group was consistent with the normal group. The plasma homocysteine level in the pre-eclampsia group was higher than in the normal group ($P < 0.05$). Levels of folic acid and vitamin B12 in the pre-eclampsia and normal groups were not statistically significant ($P > 0.05$). Patients with pre-eclampsia have hypermethylation in the $MTHFR$ gene promoter, which may be one of its causes.

**Key words:** MTHFR; Methylation; Hcy; Pregnancy hypertension