MTHFR C677T A1298C polymorphisms may predict risk of colon cancer.

Gastroenterology Week
April 12, 2004

2004 APR 12 - (NewsRx.com & NewsRx.net) -- 5,10-methylenetetrahydrofolate reductase (MTHFR) A1298C polymorphism may be related to the development of colon cancer, researchers say.

According to recent research from the United States, "MTHFR is a key enzyme in folate metabolism, diverting metabolites toward methylation reactions or nucleotide synthesis.

"Using data from an incident case-control study (1608 cases and 1972 controls) we investigated two polymorphisms in the MTHFR gene, C677T and A1298C, and their associations with risk of colon cancer. All of the combined genotypes were evaluated separately, and the 1298AA/677CC (wild-type/wild-type) group was considered the reference group," wrote K. Curtin and colleagues, Fred Hutchinson Cancer Research Center, Cancer Prevention Research Program.

"Among both men and women, the 677TT/1298AA (variant/wild-type) genotype was associated with a small reduction in risk [men: odds ratio (OR), 0.7, 95% confidence interval (CI), 0.5-1.0; women: OR, 0.8, 95% CI, 0.5-1.2]. However, the 677CC/ 1298CC (wild-type/variant) genotype was associated with a statistically significant lower risk among women (OR, 0.6; 95% CI, 0.4-0.9) but not men," the researchers stated.

"When the polymorphisms were considered individually, for A1298C a significant risk reduction associated with the homozygous variant CC genotype was seen among women only (OR, 0.6; 95% CI, 0.5-0.9), and nonstatistically significant reduced risks were observed for the variant 677 TT genotypes among both men and women," the researchers wrote.

"Stratification by nutrient intakes showed inverse associations with higher intakes of folate, vitamin B-2, B-6, B-12, and methionine among women with the MTHFR 677CC/1298AA genotypes, but not those with 677TT/1298AA. We observed opposite risk trends for both MTHFR variants, depending on whether women used hormone-replacement therapy or not (p for interaction =

The researchers concluded: "In summary, this study supports recent findings that the MTHFR A1298C polymorphism may be a predictor of colon cancer risk and have functional relevance. The possible interaction with hormone-replacement therapy warrants additional investigation."

Curtin and colleagues published their study in Cancer Epidemiology Biomarkers & Prevention (MTHFR C677T and A1298C polymorphisms: Diet, estrogen, and risk of colon cancer. Cancer Epidemiol Biomarkers Prev, 2004;13(2):285-292).

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The information in this article comes under the major subject areas of Oncology.

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