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Polymorphisms in one-carbon metabolism pathway affect survival of Chinese resected gastric cancer patients

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Deficiencies in one-carbon metabolism (OCM) influence risk for human cancers. The associations and contributions of single nucleotide polymorphisms (SNPs) of genes in OCM pathway are unclear. We investigated the effects of SNPs of genes in OCM pathway on the survival of gastric cancer (GC) patients, including *Methylenetetrahydrofolate reductase* (*MTHFR*) (677C>T, 1298A>C), *Methionine synthase reductase* (*MTRR*) (66A>G), *Methionine synthase* (*MTR*) (2756A>G), and *Thymidylate synthase* (*TYMS/TS*) (3'-UTR *ins6* > *del6*, 5'-UTR 2R>3R). We recruited 919 GC patients from 1998 to 2006. The Kaplan-Meier plots, Cox regression analyses and the log-rank tests were carried out in this study. *MTHFR* 1298CC genotype showed protective effect (HR = 0.444, 95% CI = 0.210–0.940). *MTRR* 66 GA + GG genotypes decreased the risk of death (HR = 0.793, 95% CI = 0.651–0.967) in general, and in subgroups with more pronounced among Diffuse type, more depth of invasion (T2/T3/T4), higher level lymph node metastasis (N1/N2/N3), advanced TNM stages (II/III level) and 5-Fu treatment. However, the improved survival disappeared when GC patients simultaneously had *MTR* 2756 GA + GG genotypes (HR = 1.063, 95% CI = 0.750–1.507). Although *MTRR* 66GA genotype was not associated with the survival of GC patients, patients with simultaneous *MTRR* 66GA and *MTR* 2756AA genotypes exhibited significant risk reduction of death (HR = 0.773, 95% CI = 0.609–0.981). *MTHFR* 1298 CA + CC combined with *TYMS* 5-UTR 2R3R + 3R3R genotypes (HR = 0.536, 95% CI = 0.315–0.913) also increased patient survival rates. Our results suggest that the *MTRR* 66A>G and *MTHFR* 1298A>C polymorphisms may be useful prognostic molecular biomarkers for GC patients.

Biography

Jinfei Chen has completed his M.D. at the age of 22 years from Nantong University School of Medicine and PhD. at the 41 years at Southeast University School of Medicine. He is the director of Oncology Dept. of Nanjing First Hospital, Nanjing Medical University. He has published more than 60 papers in reputed journals and has been serving as an editorial board member of repute.

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