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### Original Article

#### Association of Methylenetetrahydrofolate Reductase gene Polymorphism (C677T) with Metabolic Syndrome in an Iranian Population: Tehran Homocysteine Survey

Hossein Fakhrzadeh\*<sup>1</sup>, Mojde Mirarefin<sup>1</sup>, Farshad Sharifi<sup>2</sup>, Sara Ghotbi<sup>1</sup>, Mohsen Rezaei Hemami<sup>3</sup>, Mahsa M. Amoli<sup>1</sup>, Rasoul Pourebrahrahim<sup>2</sup>, Masoume Nouri<sup>1</sup>, Javad Tavakkoly Bazzaz<sup>1</sup>, Alireza shafaei<sup>1</sup>, Bagher Larijani<sup>1</sup>

1- Endocrinology and Metabolism Research Center, Tehran University of Medical Sciences, Tehran, Iran.

2- Public Health School, University of Welfare and Social Sciences, Tehran, Iran.

3- Epidemiology and Biostatistics Department, Public Health School, University of Tehran/Medical Sciences, Tehran, Iran.

#### Corresponding Author:

Hossein Fakhrzadeh

Endocrinology and Metabolism Research Center, Tehran University of Medical Sciences, 5<sup>th</sup> floor, Dr Shareeati Hospital, North Karegar Avenue, Tehran; Email: fakhrzad@tums.ac.ir, Tel: (+98) 21 84902476-7,

Fax: (+98) 21 88220052

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#### Abstract:

**Background:** The association of MTHFR and metabolic syndrome (MS) has been shown in special groups of diabetic and schizophrenic subjects, but no single study has investigated this relation in metabolic syndrome subjects. Our aim was to examine the association of MTHFR gene polymorphism with metabolic syndrome, type II diabetes mellitus and hypertension in an Iranian population.

**Methods:** As a cross-sectional study, the relevance of metabolic syndrome, hypertension and type II diabetes was investigated. Subjects were recruited from Tehran Homocysteine survey. Fasting serum levels of blood sugar, triglyceride (TG), total cholesterol (TC), HDL-Cholesterol (HDL-C) and LDL-Cholesterol (LDL-C), homocysteine, folic acid, and B12 were measured. MTHFR polymorphism was determined using PCR-RFLP.



**Results:** Of participants, 150, 191, 160 subjects met the criteria for metabolic syndrome, hypertension and diabetes, respectively. Compared to control group, frequency of CC, CT, and TT genotypes were not significantly different. In control and hypertensive groups, serum homocysteine levels were significantly higher in TT than CC and CT genotypes ( $P < 0.05$ ), serum folic acid was significantly lower in TT than CC genotype in hypertensive group ( $P < 0.001$ ). In diabetic subjects, serum homocysteine levels were significantly lower in CC than TT genotype ( $P < 0.01$ ), and reverse was true for serum folic acid ( $P < 0.05$ ). In hypertensive and diabetic subjects, serum folic acid levels and difference between C and T alleles were significant ( $P < 0.001$  for both), whereas in MS group only homocysteine levels differed significantly between C and T alleles ( $P < 0.001$ ).

**Conclusion:** We found no significant association between MTHFR polymorphism and metabolic syndrome, hypertension, and diabetes in this Iranian population. Results of present the study should be confirmed in larger population-based studies.

#### Keywords:

MTHFR , Metabolic syndrome , Population

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