MTHFR C677T, A1298C and ACE I/D polymorphisms as risk factors for diabetic nephropathy among type 2 diabetic patients.


Genetics Unit, Mansoura University, Egypt.

BACKGROUND: Genetic variations have been proposed to play a role in the susceptibility to diabetic nephropathy.

OBJECTIVES: To check for the association of genetic polymorphisms of methylenetetrahydrofolate reductase (MTHFR) and angiotensin converting enzyme (ACE) genes with the development of diabetic nephropathy among type 2 diabetic patients.

METHODS: Participants comprised 202 patients with type 2 diabetes, of whom 102 were affected with diabetic nephropathy. Genetic variants corresponding to MTHFR C677T, A1298C and ACE I/D genotypes were determined using the PCR technique coupled with digestion and restriction analysis.

RESULTS: Cases with diabetic nephropathy had a significantly higher frequency of the MTHFR 677 TT, 677 CT, ACE DD mutant genotypes compared with diabetic cases without nephropathy. Analysis of the association of studied MTHFR C677T, A1298C and ACE I/D polymorphisms with albuminuria showed that the MTHFR 677 T polymorphism, in the recessive and dominant models, was a risk factor for both micro and macroalbuminuria, while the ACE DD mutant genotype was a risk factor for microalbuminuria and the MTHFR 1298C in the dominant model only was a risk factor for macroalbuminuria.

CONCLUSION: These findings indicate that ACE and MTHFR genetic polymorphisms might be considered as genetic risk factors for diabetic nephropathy among patients with type 2 diabetes.

PMID:22554825