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The Mthfr 677t Allele May Influence the Severity and Biochemical Risk Factors of Alzheimer'Sdisease in an Egyptian Population

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Introduction and Objectives: Methylenetetrahydrofolate reductase (MTHFR) 677CT marker influences the risk and severity of Alzheimer's disease (AD) and whether AD is associated with homocysteine, vitamin B12, and cholesterol levels in Egypt.

Aims: The aim of this study was to determine the genotype and allele frequencies of the rs1801133 SNP and to evaluate the influence of genotype on risk and severity of disease in Egyptian patients with AD.

Methods: Forty-three Alzheimer's cases and 32 non-AD controls were genotyped for the 677C>T polymorphism. Clinical

characteristics and levels of homocysteine, vitamin B12, and cholesterol were assessed.

Results: No significant differences in the frequencies of the MTHFR alleles or genotypes between AD cases and controls (P= 0.14) were identified.The 677T mutant allele was significantly overrepresented in AD cases compared to controls (OR = 2.22; P= 0.03). The 677T/T frequency was three times higher in AD patients than in controls, which could increase plasma homocysteine levels. Severe cases of AD were the most frequent in patients with the T/T genotype (11.6%).The effect of the MTHFR polymorphism on the risk of AD may be independent of

homocysteine, vitamin B12, or even cholesterol levels.

Conclusions: The MTHFR 677C>T polymorphism—especially the presence of one copy of the T allele—appears to confer a potential risk for the development of AD. The T/T genotype may contribute to

hypercysteinemia as a sensitive marker.

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