

The catechol-O-methyltransferase and monoamine oxidase B polymorphisms and levodopa therapy in the Iranian patients with sporadic Parkinson's disease

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Background and Aims: Parkinson's disease (PD) patients vary widely in their response to levodopa treatment, and this may be partially genetic in origin. Recent studies suggest that catechol-O-methyltransferase (COMT), G1947A and monoamine oxidase B (MAOB), A644G polymorphisms might influence the risk and treatment of PD. Herein, we aimed to test the possible influence of MAOB and COMT genetic polymorphisms on the effective daily dose of levodopa administered in the fifth year of treatment. We also examined the effect of COMT and MAOB haplotypes on levodopa therapy outcome.

Methods: There were 31 females and 72 males of Iranian origin diagnosed with sporadic PD included into the study. The patients were divided into two groups. Group 1: patients received daily doses of levodopa below 500 mg in the fifth year of treatment. Group 2: those patients receiving daily, doses exceeding 500 mg in the fifth year of treatment. MAOB and COMT polymorphism genotyping was performed by using PCR-based restriction fragment length polymorphism (RFLP) analyses.

Results: Our data show that the first group suffered less frequently from dyskinesia than patients from the second group. No statistically significant differences were found in allele frequencies and genotype distributions of the studied genes between two groups. In addition, the incidence of the specific haplotypes between the two groups did not show any difference.

Conclusions: The present data suggest that pharmacokinetic or pharmacodynamic factors other than the investigated genetic variants of the MAOB and COMT enzymes seem to determine the response to levodopa in the Iranian PD patients.

Keywords: COMT; Levodopa; MAOB; Parkinson's disease; Polymorphism