P655

Association between *TRPM7* gene polymorphisms and Behçet's disease

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Transient Receptor Potential Cation Channel, Subfamily M, Member 7 (transient receptor potential melastatin 7, TRPM7) is a ubiquitously expressed member of the TRP family of ion channels, and is permeable to magnesium, calcium and divalent trace metal ions. Magnesium deficiency and altered TRPM7 expression/activity may contribute to endothelial dysfunction, vascular reactivity, proliferation, inflammation, and fibrosis which are also important factors in Behçet's disease. Thus, it might be hypothesized that TRPM7 channel might be involved in Behçet's disease. The aim of this study was to investigate a possible association between *TRPM7* gene polymorphisms and Behçet's patients in a Turkish population.

A total of 121 patients with Behçet's disease and 175 healthy controls with similar age and sex were included to this study. Genomic DNA from the participants was analyzed by a BioMark 96.96 dynamic array system. For calculation of the significance of differences in genotype and allele frequencies, the chi-square test (with Yates' correction) or Fisher's exact test was used.

The distribution of genotype and allele frequencies of the *TRPM7* gene rs55924090 (Ile459Thr) in patients Behçet's disease were significantly different from controls; AA genotype 96.8% vs. 65.4%; AG genotype 0.0% vs. 33.8%; and GG genotype 3.2% vs. 0.8%; A allele 96.8% vs. 82.3%; and G allele 3.2% vs. 17.7% ($p<0.0001$). There was also an increase in C allele (16.5% in patients vs. 9.1% in controls) and decrease in G allele frequencies (83.5% in patients vs. 90.9% in control, $p = 0.0101$) of the *TRPM7* gene rs34181677 (Thr201Ser) polymorphism. However, no marked association was found between *TRPM7* gene rs62021060 polymorphism and Behçet's disease.

In conclusion, to the best of our knowledge, the present case-control study is the first to examine the potential involvement of *TRPM7* gene variation in the risk of incident Behçet's disease. Our data showed that genetic polymorphisms in *TRPM7* gene may modify individual susceptibility to Behçet's disease in the Turkish population.