

GLOBAL MIGRAINE & PAIN SUMMIT

4th MENA Meeting & 2nd Turkish African Meeting of Headache and Pain Management

October 28-30, 2020 Virtual Congress



OP 25 - Copy Number Variation and Expression of *Chrna7* Gene in Migraine

¹Fatih ÖZALTUN, Sırma GEYİK¹, Şenay GÖRÜCÜ YILMAZ²

¹Faculty of Medicine, Department of Neurology, Gaziantep University, Gaziantep, Turkey

²Faculty of Health Sciences, Department of Nutrition and Dietetics, Gaziantep University, Gaziantep, Turkey

Background: Migraine is a common and possible hereditary disease. Copy number variation (CNV) is a phenomenon in which parts of the genome are repeated and the number of repeats in the genome varies between individuals in the human population.

Aim: The *CHRNA7* gene has a major role in the neuropsychiatric phenotypes observed in patients. The 15q13.3 gain/loss variation in this gene may be associated with migraine. Therefore, the contribution of gene expression and CNV to migraine clinic and its potential to be epigenetic biomarkers were investigated.

Method: We evaluated changes in *CHRNA7* gene expression levels and CNV in migraine patients by q-PCR. Copy numbers were graded as normal copy (2), gain (2>) and loss (<2). Results were analyzed using the $2^{-\Delta\Delta CT}$ calculation method.

Results: *CHRNA7* gene is significantly downregulated in patients with migraine ($p < 0.05$). No significant difference was observed between gain, normal and loss copy numbers and expression values among individuals with migraine ($p > 0.05$). However, in the analysis of copy number variation in the *CHRNA7* gene, gain and loss in the patient group was statistically significant according to healthy control group ($p < 0.05$).

Conclusion: Down-regulation of the *CHRNA7* gene may contribute to the formation of migraine by inactivation of $\alpha 7nAChR$. The association of CNV gains and losses with migraine will lead to a better understanding of the molecular mechanisms and pathogenesis in order to better define the disease and to be used as a treatment target.

Key words: Copy number variation, *CHRNA7*, migraine, 15q13.3, gain/loss, gene expression.