

Association between STX1A c.31-1811CT polymorphism and serotonin concentration in migraine patients

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Migraine is a primary headache disorder that affects 11% of adult population. It is divided into two clinical subtypes: migraine with aura (MA) and migraine without aura (MO). Migraine is multifactorial disease and may be a result of polymorphisms in numerous genes, e.g. STX1A c.31-1811CT polymorphism (rs941298) was associated with MO. The STX1A gene encodes syntaxin 1A, a presynaptic membrane protein which controls the synaptic vesicle exocytosis and functioning of ion channels. Syntaxin 1A is involved in the regulation of the serotonergic system by affecting the expression and location of the serotonin (5-HT) transporter. The reduced 5-HT concentration is a hallmark of migraine and may be caused by genetic changes. The aim of the study was to analyze STX1A c.31-1811CT polymorphism and 5-HT plasma concentration in migraine patients. The study included 90 migraine patients (MA: 39, MO:51) and 90 controls. Mean age of participants was 36±13 years. The HRMA and sequencing were used for genotyping. 5-HT concentration was determined by HPLC/EC technique. T allele of STX1A c.31-1811CT was more frequent in migraine patients than controls, but there was no statistical difference. TT genotype in MO patients was associated with lower 5-HT concentrations (0.012 µg/ml) as compared to controls (0.140 µg/ml) and MA subjects (0.120 µg/ml) with TT genotype (p=0.0088). STX1A c.31-1811CT polymorphism may alter the 5-HT concentration in MO patients. The functional studies would assess the effect of polymorphism on syntaxin 1A and 5-HT transporter relation. Analysis of STX1A polymorphisms and 5-HT concentration may be useful in optimization of migraine pharmacotherapy.