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Pathogenetics of Internet addiction in adolescents

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The aim of the research. Internet addiction (IA) is a relatively new psychological phenomenon having signs of a social epidemic, specifically attributed to vulnerable groups (adolescents). The prevalence of IA among adolescents varies depending on the studied ethnosocial groups and the diagnostic criteria. In Europe, the prevalence of IA among adolescents is on average 4.4 % [1]. In Asian countries (China, South Korea, Japan, etc.), the prevalence of IA is significantly higher – 8.1-26.5 % [2]. The genetic component of developing Internet addiction was shown by twin studies using various populations, however, to date, the specific genes involved in the mechanisms of such heritability are not exactly identified [3].

The purpose of with work was to study the prevalence of Internet addiction options, different in severity, addiction pattern and content, in adolescents from ethnically different cities, to assess the frequency of mental and somatic comorbidity in selected groups, to investigate the associative role of candidate neurotransmitters and to conduct a population analysis of polymorphisms of candidate genes oxytocin-, dopamine-, serotonin-, norepinephrine-, melatonin- and nicotineric neurotransmitter systems.

Material and methods. The study of genetic predisposition to IA included adolescents living in Krasnoyarsk (n = 359), adolescents from Abakan (n = 150) and from Kyzyl (n = 200). In total 16 SNPs were genotyped by RT-PCR.

Results. For the first time, data were obtained on the prevalence of IA among urban adolescents in Central Siberia – pathological Internet addicted behavior was registered in 6.8 % of an unbiased school sample in Krasnoyarsk (using a CIAS scale). The Internet addiction structure was as follows: Adaptive Internet Usage (expected frequency 60-75 %), revealed frequency – 46.9 %; Non-adaptive Internet Usage (expected frequency 20-30%), revealed frequency – 31.3 % and Internet Addiction (expected frequency 5-10 %), revealed frequency – 21.8. It is noteworthy that the frequency of non-adaptive adolescents among Tuvans is 45 %.

Conclusion. Genotypes including the T allele rs1044396 *CHRNA4* can be considered protective against IA among the Caucasians, while the CC genotype is predisposing to IA. The heterozygous variant CG rs2229910 *NTRK3* can be considered protective against IA, and the GG genotype is predisposing to pathological IA among the Caucasian adolescents.

Key words: Internet addiction, adolescents, gene polymorphism, *CHRNA4*, *NTRK3*.

Conflict of interest. The authors declare the absence of obvious and potential conflicts of interest associated with the publication of this article.

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