Serum Ciliary Neurotrophic Factor Concentration as a Potential Biomarker of Efficacy of Citicoline Pharmacotherapy of Temporal-Lobe Epilepsy in Women

Marat Uzbekov* and Ludmila Musina
Department of Psychiatry, Moscow Research Institute of Psychiatry, Russia

Material and Methods

36 women with temporal-lobe epilepsy were enrolled in the study. Patients were divided into three groups (G1, G2, G3) depending on severity of disease: slowly progressing (G1), moderately progressing (G2), and progressing (G3) courses of disease. Each group included 12 patients selected randomly. Clinical profile of disease, as well as the inclusion and exclusion criteria were described previously [3]. Investigation was performed in accordance with the permission of the local ethical committee of Moscow Research Institute of Psychiatry (N 19/8,27.11.2017). Control group consisted of 35 healthy women. 500 mg of citicoline was injected i/m daily for 5 days on the background of antiepileptic treatment. CNTF concentration in blood serum was assessed by ELISA method using Uniplan analyzer (Russia) and RsD systems (United States) [3]. The Mann–Whitney U-test was used for the comparison of small groups. The difference was considered significant at p< 0.05.

Results and Discussion

At the beginning of study CNTF concentration in accordance with severity of disease was significantly (p<0.001) higher: 14.3; 18.9 and 32.1pg/mL in G1, G2 and G3 groups, respectively, in comparison with control level (3.4pg/mL of serum). A comparison between different types of epilepsy course demonstrated statistically significant (p < 0.05) differences in the CNTF level: 2.24-fold between the G3 and G1 groups, 1.7-fold between the G3 and G2 groups, and 1.32-fold between the G2 and G1 groups. After citicoline treatment CNTF concentration significantly decreased by 1.7 (8.3pg); 1.5 (12.6pg) and 1.3 (24.4pg) times in G1, G2 and G3 groups, respectively, in comparison with the level before treatment (14.3; 18.9 and 32.1pg/mL, respectively), and these changes in CNTF concentration were followed by the improvement of clinical status of patients. Aggravation of clinical manifestation is accompanied by increase in CNTF levels in serum of patients with epilepsy. A more severe epileptic process is accompanied by more intensive production of CNTF in the brain. However, CNTF does not exhibit neuroprotective action. We hypothesize that CNTF is generated in response to pathological process, but immediately leaks into blood through damaged blood–brain barrier and does not exhibit neuroprotective action [3,4]. Citicoline is a natural endogenous compound with nootropic properties. It is an intermediate metabolite in phosphatidylcholine synthesis. The latter is one of the most important structural components of biological membranes. Decrease of CNTF concentration in serum after citicoline treatment points out on repair of blood–brain barrier function and tendency to normalization of metabolic processes.
the efficacy of citicoline treatment of patients with temporal-lobe epilepsy.

References