Секция «Клиническая медицина»

Assessment of the relative risk of small blood cerebral vessel thrombosis in patients with patients with schizophrenia in exacerbation

Карпова Наталья Сергеевна
Выпускник (специалист)
Московский государственный университет имени М.В.Ломоносова, Биологический факультет, Кафедра биохимии, Москва, Россия
E-mail: nat_karpova@mail.ru

Introduction. According to WHO, there are 45 million schizophrenia (SCH) patients worldwide. That is, the prevalence of SCH is about 1% of the world's population. One of the most essential elements of the pathogenesis of mental disorders, including SCH, is the development of the phenomenon of neuroinflammation (NI), which significantly aggravates the condition of patients. It is shown that in NI, the blood-brain barrier is broken, and the cellular and plasma elements of the blood enter the parenchyma of the brain. This is accompanied by the generation of various factors of NI and procoagulant microparticles (PM), which in turn create an increased concentration of thrombin in the blood. It increases the risk of thrombosis of small vessels in the brain and in periphery.

The aim of this study is to assess the risk of microthrombotic impairments in patients with SCH and schizoaffective disorders (SAD) in exacerbation on the basis of the "fibrinodynamics" technology.

Population of patients and methods. We studied blood plasma of 56 women with SCH (38 patients) and SAD (18 patients) in exacerbation. The control group consisted of 20 donors. The technology of fibrinodynamics includes the study of coagulation and fibrinolysis based on thrombodynamics in the coagulation and fibrinolysis regime, respectively. Using the Karmin authoring software, the main parameters of procoagulant activity of PM - the time of maximum of the second peak and the hemostasis potential of spontaneous clots formed from PM were determined.

Results. It is shown that during SCH, the dynamic profile of the brightness of the clots often has two peaks: the first peak is formed as a result of the growth and lysis of the clot initiated by the activator, the second peak is formed because of the growth and lysis of spontaneous clots in the volume of the cuvette. The fast second peak (T_Peak 2<60 min) in the control group is present only in 15% of cases. In patients with schizophrenia, it is observed in 65,6% of cases. It is 4,4 times more often than in the controls (p=0,01; χ square test). In patients with SAD, it is observed only in 27,8% of cases, i.e. 1,85 times more often than in control (p >0,05), i.e. the difference is not significant. The relative risk of thrombosis in group with SCH is 4,4 (95% CI*=1,5-12,8), p=0,007. The odds ratio is 10,9 (95% CI*=2,7-12,8; p<0,001).

The assessment of the potential of spontaneous clots hemostasis showed that 42% of patients with SCH have a shift of this parameter above the norm, which indicates an increased risk of thrombosis of small cerebral arteries of these patients.

Conclusion. The technology of fibrinodynamics^{TM} has a good potential for introduction into personalized medicine to detect increased risks of thrombosis of small cerebral vessels in patients with SCH in exacerbation leading to the development of cognitive deficit and to control the normalization of hemostasis during antiaggregant or anticoagulant treatment.

* 95% confidence interval