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The relationship of the emotional-personal status with the life quality self-assessment on the brain tumor location

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Introduction: It is well-known that brain lesions of tumor cause a variety of cognitive process disorders and changes in the psycho-emotional status. However, studies aimed at the psychometric comparison of the indicators of cognitive functions and emotional regulation of behavior depending on the tumor location has only been started quite recently. The interest in analyzing the role of neuroticism, a personality trait that reflects the level of individual emotional reactivity, is caused by the fact that it affects the subjective assessment of well-being, including among cancer patients. Given that the medial prefrontal or dorsolateral cortex is considered as a structural correlate of neuroticism, we assumed that brain tumor in those cortex areas should lead to the disassociation of neuroticism and self-evaluation of the quality of life.

Method: The study involved 62 patients of the neurosurgical clinic (52.1±10.6 years, 37 women) (gr_P) and 40 healthy people (48.6±10.9 years, 29 women) who formed the control group (gr_C). The age, education, and share of men and women in the groups did not differ. All participants of the study were right-handed. The criteria for including patients for psychometric testing were the absence of a gross neurologic deficit at the preoperative stage, compensation for somatic status, and tumor location: in the frontal or parietal divisions of the left (GR_LF and GR_LP) or right hemisphere (GR_PF and GR_PP). To elucidate the peculiarities of cognitive functions, we used the IQ-test H. Eysenck. The EPQ method was used to determine neuroticism (N) [Eysenck H. et al., 1991] and the SF 36 questionnaire was used to assess the quality of life.

Result: The general group of patients (gr_P) is characterized by significantly lower values of all parameters except for neuroticism (N), in comparison with the control group (gr_C)) (Table 2). The results of the correlation analysis of N, IQ, and indicators of creativity with QoLphys and QoLpsy for each subgroup from gr_P indicate that there is positive relationship between QoLphys and IQ ($0.56 < r < 0.64$, $0.006 < p < 0.03$) and a negative one between QoLpsy and N ($r = -0.52$, $p < 0.05$). Examples of the latter two correlations for gr_RP are shown in Fig. 2A and 2B, respectively (Figure 1).

Conclusion: Brain lesion with a tumor result in a significant decrease in intelligence, as well as self-assessment of the health state compared with the control group, while the level of neuroticism does not change significantly. In contrast to the control group, in which the self-assessment of the health state largely depends on the extent of neuroticism, when the brain is damaged by a tumor, the integral indicators of physical and mental health are determined primarily by cognitive characteristics the IQ level. The ratio of self-assessment of health indicators and the cognitive-emotional status of patients in the pre-operative period depends on the lesion location: a higher level of the integral index of physical health corresponds to an increase in intelligence in groups of patients with tumor location in the posterior regions of the right hemisphere, while mental health corresponds to a better figurative fluency; in case of its anterior part lesion, a better figurative fluency corresponds to a better self-assessment of the mental component of health. An inverse correlation between neuroticism and the integral indicator of mental health is typical of only the tumor location in the parietal regions of the right hemisphere.

Biography

Artem Perfilev has Studied Neurosurgery Residency at the Department of Neurosurgery of Novosibirsk Research Institute of Traumatology and Orthopedics. He is currently working in the Department of vascular neurosurgery. He has more than 40 scientific published works, participated in international and national conferences. His scientific interests are devoted to study not only the problems of vascular neurosurgery, but also to a large extent the fundamental aspects of neurophysiology and neuro-oncology. His aim is studying cognitive functions, quality of life and mental status in neurosurgical patients.

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