CHARACTERISTIC SIGNS OF MODERATE COGNITIVE IMPAIRMENT IN THE ELDERLY AND EARLY PREVENTION

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The severity of cognitive impairment in vascular brain damage ranges from minimal impairment to dementia and is determined by a number of factors, including the age of patients. Dementive and non-dementive cognitive impairment are leading among cerebral diseases in terms of prevalence. Dementia affects 5% of persons over 60 years of age; its prevalence doubles with every 10 years of age. Vascular lesions of the brain are one of the most common causes of cognitive impairment in in the elderly. According to European epidemiological studies, dementia occurs in 6-7% of people over the age of 65, and Alzheimer's disease alone ranks 2nd-3rd in medical and social care costs among neurological and mental disorders. The importance of the provision is further reinforced by the fact that in many cases, dementia syndrome develops from milder (non-demic) cognitive impairments that accompany a large number of neurological and somatic diseases. Cognitive disorders of vascular genesis that do not reach the degree of dementia, the so-called vascular moderate cognitive disorders, have recently attracted more and more attention.

Memory, attention, speech, intellect, praxis, and gnosis are cognitive functions with the help of which the process of rational cognition of the world is carried out. There are three functional blocks that control these processes. The first functional block (activation block) includes trunk-subcortical structures and limbic system: ascending part of reticular formation of brain stem, optic tuberosities, striate bodies, interstitial brain, hippocampus and its connections with amygdala, mediobasal frontal lobes and cingular gyrus. These structures ensure activation of the cerebral cortex in response to external stimulation or intrinsic motivation.

They maintain an optimal level of attention concentration and are responsible for the motivational-emotional support of activity. In addition, a specific function of the hippocampus is the comparison of newly incoming stimuli with previous ones, which plays an important role in the process of assimilation of new information.

When brain stem-subcortical structures are pathologized, reaction time increases, which leads to slowness of thinking and other cognitive processes (bradyphrenia). The normal correlation between the strength of the stimulus and the degree of cortical activation is disturbed: a weak stimulus can cause significant cortical activity.

Clinically, this will lead to increased distractibility, inability to maintain the initiated activity for a long time. Such disorders are called neurodynamic cognitive disorders. Pathology of the hippocampus and functionally related structures leads to memory disturbances for current events (fixation and anterograde amnesia).

The second functional block (the block of information reception, processing, and storage) includes secondary and tertiary zones of the cortical analyzers of somatic sensitivity, hearing, and vision, and i.e. the associative cortex of the parietal, temporal, and occipital lobes of the brain. These structures provide perception, recognition and storage of information received from the external world, and are also responsible for formation of ideas about three-dimensional space.

Abnormalities of gnosis and memory, which have modality-specific character, develop at pathology of structures of the second functional block. The pathology of the temporal lobe impairs auditory gnosis and auditory memory; the pathology of the occipital lobe impairs visual gnosis and visual memory; the pathology of the parietal lobe impairs somatic gnosis and kinesthetic memory. In addition, when the parietal lobe of the brain is affected, kinesthetic apraxia develops, which, like somatic agnosia, is associated with a violation of the body schema. The lesion of the junction zone of the temporal, parietal and occipital lobes of the brain causes impairment of spatial representations, which is manifested in the sphere of gnosis and praxis.

Cognitive disturbances in the structures of the second functional block are called opercular, or instrumental.

The third functional block includes frontal lobes of the brain. It is responsible for regulation of a person's voluntary activity, i.e. for voluntary choice of the goal of the activity, development of a plan for achievement of the goal set, and control of the obtained results.

Damage of the third functional block leads to cognitive, affective and behavioral disorders, which are based on one or more of the following mechanisms:

- decrease in activity and initiative, weakening of motivations (apathy) and impulses to any purposeful activity (abulia):

The development of cognitive disorders is associated with focal or diffuse damage to the brain, resulting in impairment of one or more cognitive functions. The most severe type of disorder is dementia. The diagnosis of dementia is appropriate when cognitive impairment is so pronounced that it directly affects daily life.

Cognitive and psychoemotional disorders can act as the earliest markers of neuropsychological distress and the degree of cerebrovascular risk, and in dynamics - as criteria for assessing the effectiveness of therapeutic and preventive measures.

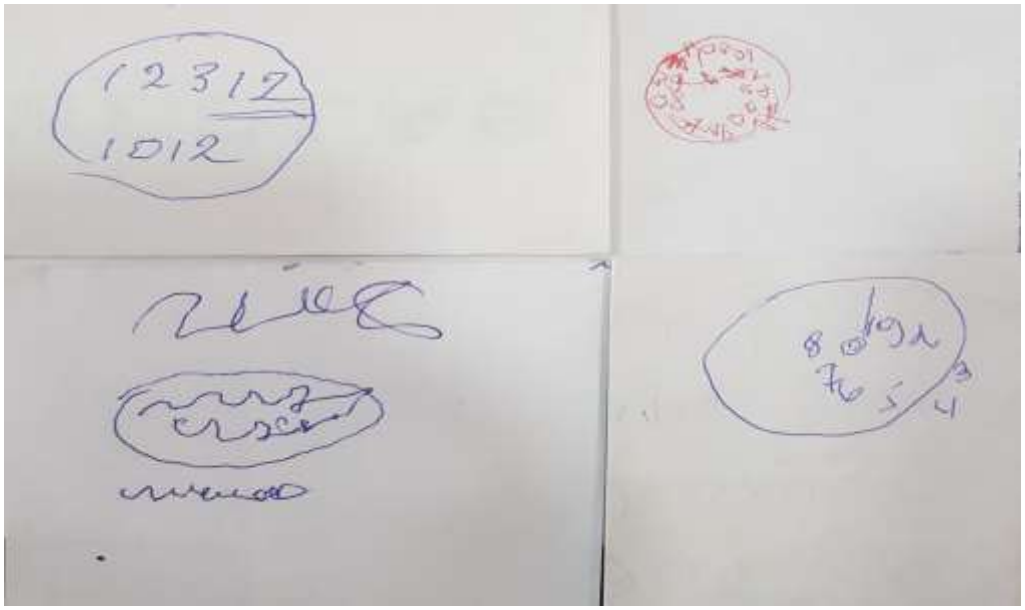
Objective: To study typical neurocognitive disorders and psychopathological disorders in patients with cerebrovascular disease aged over 60.

Materials and methods: According to the sex distribution, male patients prevailed among the examined patients, 54% vs. 46%, respectively. The diagnosis of moderate

cognitive impairment (MCI) was made according to ICD11 criteria, on the basis of history, a thorough clinical and neurological examination, examination of cognitive functions, and magnetic resonance imaging (MRI). Psychological and neuropsychological examinations included: a brief mental status assessment scale (MMSE), examination of attention concentration and mental performance (Bourdon test), examination of praxis functions and spatial orientation (clock drawing test), level of attention and memory activity by means of the "10 word memorization" test according to A.R. Luria technique. Indices of anxiety and emotional sphere were investigated by the Spielberger-Hanin test

Patients were divided into two groups, group 1 - patients receiving complex treatment with the inclusion of Memantine, group 2 - patients receiving basic therapy.

Results and discussion: The sum of MMSE scores in both groups was 23.6+0.1, which was indicative of moderate cognitive impairment. Analysis of the expression of praxis and spatial orientation showed a mean value of 7.6+_0.08. It should be noted that all the patients drew both the dial and the hands independently. Correctly positioned arrows with slight inaccuracies was a characteristic feature of the ACS. In no case was the inability to draw the hands correctly even in the finished dial, which would have given rise to a diagnosis of dementia (Fig. 1).



The neuropsychological examination, which was carried out using the Bourdon Correction Test, revealed a significant change in measures of concentration and stability of attention. In all patients, the level of attention concentration was 146.5+_3.9, and attention stability was 3.6+_0.08, indicators that were significantly lower compared to the age norm. Further neuropsychological examination included determining the level of active attention and memory using the "10-Word Memorization" test by the method of A.R. Luria. All the patients examined had deviations, e.g., short-term memory was 6.6+_0.9, long-term memory was 7.2+_0.1 and memorization productivity was 54.0+_0.2. that is, all the patients named fewer words, both in the first and repeated

playbacks. The difference in AO compared to age norm was 35% for short-term memory and 38% for long-term memory.

Next, a visual memory test was conducted. Recognition of objects in both groups was relatively preserved and equaled 9.9+_0.09.

Anxiety and emotional sphere scores were investigated using the Spielberger-Hanin test. Anxiety in the emotional sphere clearly prevailed in the patient group on both the reactive and personality parameters and was equal to 45.9+_ and 53.1+_0.3, respectively.

The following indicators were revealed while comparing the groups against the background of the therapy. The conducted complex treatment with the inclusion of drugs from the Memantine group gave an improvement in the dynamics of the MMSE scale by 25.1% compared to the group of patients receiving baseline treatment - 7.5%. On corrective test of Bourdon on a background of treatment with inclusion of Memantine dynamics of improvement of attention concentration was 89,9 %, and stability of attention - 14,4 % (in the second group accordingly 20,6 % and 6,6 %). With the help of test on memorizing 10 words, the state of short-term and long-term memory, as well as memorization productivity were determined. During the treatment, the dynamics of memory improvement in Group 1 patients was 75,0% for short-term memory, 63,0% for long-term memory and 52,9% for recall productivity. Group 2 patients - by 20,8; 33,1 and 17,8% respectively.

Presence of memory reduction factor is the reason for formation of anxiety disorders, and, consequently, in the group of patients taken Memantine against the background of improvement of cognitive functions there was observed a decrease of anxiety indexes. Anxiety in the emotional sphere in the main group on the parameter of reactive and personality characteristics significantly decreased and was equal respectively to 32,9+_ and 38,1+_0,3.

Conclusions:

Thus, changes in cognitive functions, in the form of moderate dysfunction, in physiological aging and even more so in chronic brain ischemia are associated with disconnection of cortical-subcortical and cortical-cortical connections. The essence of the disconnection phenomenon consists in disconnection between different parts of the brain, which leads to slowing down and reduction of intellectual and mental functions.

The use of sensitive tests, such as the visual memory test and speech activity test, allow early detection of the presence of moderate cognitive changes and are also markers not only of early diagnosis of predementia disorders, but also evaluation of the adequacy of ongoing therapy.

Memantin in the complex therapy of moderate cognitive disorders proved its pathogenetic effect on the phenomenon of cortical-subcortical and cortical-cortical dissociation

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