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COGNITIVE AND HALLUCINATORY-PARANOID DISORDERS IN VASCULAR DEMENTIA (CLINICAL AND PSYCHOPATHOLOGICAL STRUCTURE AND DIAGNOSTIC CRITERIA)

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The aim of the study is to investigate the clinical and psychopathological structure of cognitive and hallucinatory-paranoid disorders in patients with vascular dementia (at different stages of the pathological process).

Materials and methods. The work was based on the results of the study of 75 patients with vascular dementia (VD) and hallucinatory-paranoid disorders (HPD), who made up the main group. As a control group, 63 patients with VD without predominant HPD participated in the study. The complex of research methods included clinical and psychopathological, psychometric, psychodiagnostic and mathematical statistical methods.

Results. The results of the study showed that the characteristics of HPD and cognitive disorders (CD) depend on the stage of VD development. The clinical and psychopathological structure of HPD in patients with VD in the middle stage of development (MSD) was characterized by the predominance of paranoid disorders with systematic ideas of damage, robbery, theft, which occurred in the form of paranoid delusional disorder.

In patients with HPD with VD in late stage of development (LSD), the in clinical picture hallucinations were dominated (visual, auditory and tactile), which occurred in the form of hallucinosis.

With the transition of VD from MSD to LSD, the frequency of cognitive disorders of praxis, gnosis, attention, language, orientation increased and thinking disorders deepened.

Clinical manifestations of HPD in VD were formed in the structure of cognitive disorders, the transformation of which was determined by the stage of development of the pathological process.

In this work, a categorical and dimensional analysis of HPD in patients with VD of different stages of development was carried out, their clinical, psychopathological and phenomenological structure, the interaction of cognitive and non-cognitive components, and types of courses were determined. The data obtained made it possible to form diagnostic criteria for different stages of VD development, which are the basis for increasing the VD treatment effectiveness.

Keywords: vascular dementia, hallucinatory-paranoid disorders, cognitive disorders, psychopathological structure, diagnostic criteria.

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КОГНІТИВНІ ТА ГАЛЮЦИНАТОРНО-ПАРАНОЇДНІ ПОРУШЕННЯ ПРИ СУДИННІЙ ДЕМЕНЦІЇ (КЛІНІКО-ПСИХОПАТОЛОГІЧНА СТРУКТУРА ТА КРИТЕРІЇ ДІАГНОСТИКИ)

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Метою дослідження було вивчення клініко-психопатологічної структури когнітивних і галюцинатовно-параноїдних розладів у хворих на судинну деменцію (на різних стадіях патологічного процесу).

В основу роботи покладені результати дослідження 75 пацієнтів із судинною деменцією (СД) та галюцинаторно-параноїдними розладами (ГПР), які становили основну групу. До контрольної групи ввійшли 63 пацієнти із СД без переважаючих ГПР.

Проведені дослідження показали, що характеристики ГПР та когнітивних розладів (КР) залежать від стадії розвитку СД. Клініко-психопатологічна структура ГПР у хворих СД на середній стадії розвитку (ССР) характеризувалася переважанням параноїдних і параноїдальних розладів. У хворих з ГПР із СД на пізній стадії розвитку (ПСР) домінували галюцинаторні розлади. З переходом СД із ССР у ПСР зростала частота когнітивних порушень.

Отримані дані дали змогу розробити діагностичні критерії для різних стадій розвитку СД.

Ключові слова: судинна деменція, галюцинаторно-параноїдні порушення, когнітивні розлади, психопатологічна структура, критерії діагностика.

Introduction. Dementia is a severe neurodegenerative disorder, the mechanisms of formation of which are closely related to age, which allowed to classify this pathology as an age-related disease. According to the results of modern research, more than 50 million people in the world have dementia and their number is growing annually, and in 2050 it will reach 152.8 (130.8 to 175.6) million cases, which is associated with population growth and aging [1, 2].

The expected economic burden of dementia is estimated to be USD 2 trillion by 2030 [3]. The medical and social consequences of dementia include significant impairment of social functioning and quality of life, disability, and the impact of the disease on the family environment and caregivers [4, 5].

Dementia is caused by various diseases and injuries that cause brain damage, primarily Alzheimer's disease, vascular disease of the brain, and their mixed variants [3, 4].

Vascular dementia (VD) is the second most common subtype of dementia, accounting for approximately 20% of all dementia cases. This subtype of dementia is characterized by numerous cardiovascular risk factors (hypertension, hyperlipidemia, diabetes, atrial fibrillation, smoking) and higher mortality rates from the time of diagnosis than other variants [6–8].

In the structure of clinical manifestations of VD, cognitive and non-cognitive disorders are distinguished. Non-cognitive manifestations of VD include a wide range of psychopathological disorders of varying severity, including depression, anxiety, hallucinations, delusional disorders, agitation, and aggressive behavior [9]. The literature provides evidence that the most frequent and severe non-cognitive disorders in dementia are hallucinatory-paranoid disorders (HPD), which cause impaired social functioning and the financial burden of this pathology [10, 11].

According to modern clinical interpretations, cognitive disorders (CD) in VD are usually chronic, progressive and characterized by a complex of manifestations in the form of impaired memory, attention, thinking, gnosis, praxis, language, social functioning and a marked decrease in quality of life [12, 13].

Despite the active study of dementia, the effectiveness of treatment and rehabilitation measures for patients with VD remains extremely low, due to untimely and imperfect diagnosis, which is carried out without taking into account the clinical and psychopathological structure of HPD and CD, their mutual influence and relationship, the stage of dementia development and the rehabilitation potential of this category of patients.

Formulation of the research purpose (statement of the task). The aim of the research is to study their clinical and psychopathological structure, mutual influence and develop their diagnostic criteria based on a comprehensive assessment of cognitive and hallucinatory-paranoid disorders in patients with vascular dementia (at different stages of the pathological process).

Materials and methods of the study. The study relies on the results of the study of 75 patients with VD (F01.3) with HPD (main group: 41 patients in the middle stage of development, MSD; 34 patients in the late stage of development, LSD). As a control group, 63 patients with VD without HPD participated in the study (34 patients in the MSD; 29 patients in the LSD).

All studies were conducted in accordance with the bioethical requirements of the Declaration of Helsinki adopted by the General Assembly of the World Medical Association for the Ethical Principles for Scientific Medical Research Involving Human Subjects (1964, with subsequent amendments, including the 2000 version), the Council of Europe Convention on Human Rights and Biomedicine (1977), the relevant regulations of the World Health Organization, the International Council of Medical Scientific Societies, the International Code of Medical Ethics (1983), and the laws of Ukraine and the order of the Ministry of Health of Ukraine No. 690 of 23.09.2009. All patients who participated in the study signed an informed consent. The study was conducted on the basis of the Odesa Regional Psychiatric Hospital No 2.

The main characteristics of the patients in the main group were: female sex (in 68.0% of cases, at $p < 0.05$), average age 78.6 ± 7.3 years (at $p < 0.05$), hereditary burden of affective disorders (mainly depressive and dysthymic in 28.0% of cases, at $p < 0.01$), perinatal pathology in the anamnesis (in 20.0% of cases, at $p < 0.05$), concomitant pathology of the nervous system (history of stroke, transient ischemic attacks in 50.7% of cases, at $p < 0.05$), lack of family (unmarried, divorced, widowed, widowers in 38.7% of cases, at $p < 0.05$), poor material and living conditions (in 42.7% of cases, at $p < 0.01$), presence of chronic psychogenic factors (in 72.0% of cases, at $p < 0.05$), associated with deterioration of the financial situation (in 78.7% of cases, at $p < 0.05$), loneliness, need for love and close relationships (in 65.3% of cases, at $p < 0.01$).

Specific clinical characteristics of patients with VD and HPD were the burden of anamnesis with vascular pathology of the brain (stroke, transient ischemic attacks), perinatal pathology and the influence of chronic factors of mental trauma.

To realize the purpose and objectives of the study, a set of methods was used, which included: clinical and psychopathological, psychometric, psychodiagnostic and statistical research methods.

The clinical and psychopathological method was used to study the clinical and psychopathological structure of CD and HPD in patients with VD.

As part of the clinical and psychopathological approach, structural interviews, routine neuropsychological examinations, and scales for assessing the Clinical Dementia Rating (CDR) and severity of cognitive impairment – Global Deterioration Scale (GDS) were used.

The block of psychometric studies included the following methods: Neuropsychiatric Inventory (NPI) [14]; Behavioral Questionnaire (Bahav-AD) [15]; Non-cognitive sections of the Alzheimer's Assessment Scale (ADAS-Non Cog) [16].

A set of psychodiagnostic measures, including the Mini-Mental State Examination (MMSE) [17]; the Montreal Cognitive Assessment Scale (MoCa) [18]; the Psychiatric Disability Assessment Schedule (PDAS) [19].

Statistical methods of data processing and analysis included: methods of descriptive statistics (percentage (%)), arithmetic mean (M), standard error of the arithmetic

mean (m), standard deviation (σ); methods of comparative statistics (t-test), method of sequential statistical analysis (calculations of diagnostic coefficients (DC) and Kulbak's measures of information (MI)), method of correlation analysis (Pearson's r). Statistical data processing was performed using Excel and Statistica Application, Version 10.0.1011.0, Statsoft Inc. 2017.

Results of the study. Clinical and psychopathological analysis of HDP and CD with VD showed that their structure differs depending on the stage of dementia development.

The following patterns were found in the structure of clinical and psychopathological manifestations of HPD in patients with VD in the MSD (Fig. 1):

– revalence of paranoid disorders (in 75.6% of cases, at $p < 0.05$, hereinafter compared with patients with VD in the LSD) over perception disorders (in 36.6% of cases, at $p < 0.01$);

– the prevalence of frequent (3.3 ± 0.4 points, $p < 0.05$) delusions of material damage, robbery, theft (in 26.8% of cases, $p < 0.01$), relationships (in 21.9% of cases, $p < 0.01$) and jealousy (in 17.1% of cases, $p < 0.01$) in a moderate degree of severity (2.4 ± 0.4 points, $p < 0.05$);

– the prevalence of systematized delusions (in 70.1% of patients with delusional disorder, $p < 0.01$) over poorly developed, unsystematized and fragmentary delusions that do not tend to expand (in 29.9% of patients, $p < 0.01$);

– in 12.2% of patients with HPD in VD in the MSD, it was in the form of paranoia ($p < 0.01$); in 63.4% of patients – in the form of paranoid delusional disorder ($p < 0.01$); in 24.4% of patients – in the form of hallucinosis ($p < 0.05$);

– combination of HPD with frequent (3.4 ± 0.4 points, at $p < 0.05$, hereinafter compared with patients with VD in MSD without HPD) vagrancy (in 41.5% of cases, at $p < 0.05$) of moderate severity (2.5 ± 0.5 points) periodic (2.5 ± 0.6 points, at $p < 0.05$) verbal aggression (in 48.8% of cases, at $p < 0.01$) of moderate severity (2.3 ± 0.3 points); frequent (3.2 ± 0.2 points, at $p < 0.05$) disorders of rhythm day/night (in 78.0% of cases, at $p < 0.05$) moderate-severe severity (2.6 ± 0.4 points, at $p < 0.05$); often (3.4 ± 0.5 points, at $p < 0.05$) low mood (in 65.9% of cases, at $p < 0.05$), which manifested itself in the form of dysphoria (in 43.9% of cases, at $p < 0.01$) of moderate severity (2.4 ± 0.3 points); fear of being left alone (in 41.5% of cases, at $p < 0.05$); with frequent (3.1 ± 0.5 points, at $p < 0.05$) states of irritability (in 36.6% of cases, at $p < 0.05$) of moderate severity (2.3 ± 0.4 points, at $p < 0.05$)

In this group, significant correlations were found between the severity of delusional disorders and the severity of dysphoria ($r = 0.69$), agitation (aggressiveness) ($r = 0.66$), and between the severity of perceptual disorders and the severity of day/night rhythm disturbance ($r = 0.72$).

Thus, the clinical and psychopathological structure of HPD in patients with VD in the MSD was characterized by the prevalence of paranoid disorders with systematized ideas of damage, robbery, and theft, which were mainly in the form of paranoid delusions. HPD in this stage of VD were accompanied by vagrancy, verbal aggression, day/night rhythm disorders, and low mood in the form of dysphoria.

The following features were found in the structure of clinical and psychopathological manifestations of HPD in patients with VD in the LSD (Fig. 2):

– predominance of hallucinatory disorders (in 82.4% of patients, at $p < 0.01$, hereinafter compared with patients with VD in the MSD) over paranoid disorders (in 55.8% of patients, at $p < 0.05$);

– the presence in the structure of perception disorders of frequent (3.2 ± 0.4 points, at $p < 0.05$) visual (in 23.5% of cases, at $p < 0.01$), auditory (in 26.5% of cases, at $p > 0.5$) and tactile (in 20.6% of cases, at $p < 0.01$) hallucinations of moderate severity (2.4 ± 0.4 points, at $p < 0.05$);

– predominance of poorly developed unsystematized and fragmentary delusions that do not tend to expand (in 84.2% of patients with delusional disorder, $p < 0.01$) over systematized delusions (in 15.8% of patients with delusional disorder, $p < 0.01$);

– the course of HPD in the form of paranoia (in 38.5% of patients with HPD, $p < 0.05$); paranoid delusional

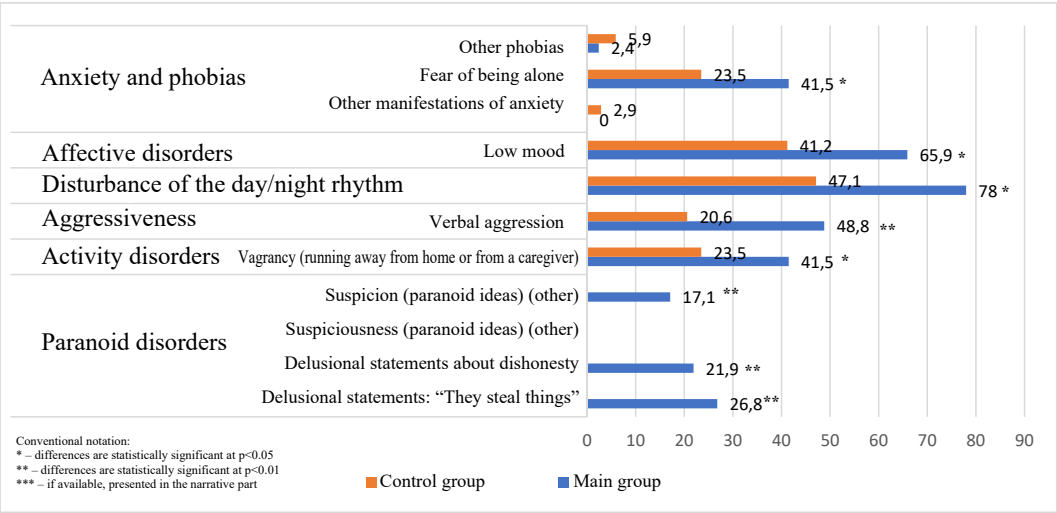

Fig. 1. Structure of clinical and psychopathological manifestations of HPD in patients with VD in the MSD

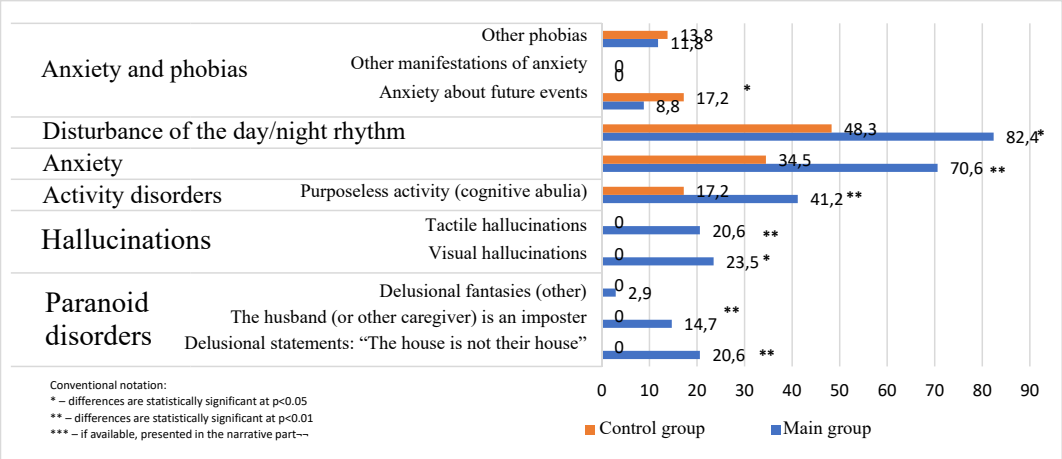

Fig. 2. Structure of clinical and psychopathological manifestations of HPD in patients with VD in the LSD

disorder (in 17.3% of patients, $p < 0.01$) and hallucinosis (44.2% of patients, $p < 0.05$);

the combination of HPD with frequent (3.5 ± 0.4 points, at $p < 0.05$, hereinafter compared with patients with VD in the LSD without HPD) aimless activity (cognitive bulimia) (in 41.2% of cases, at $p < 0.01$) moderate to severe (2.6 ± 0.4 points, at $p < 0.05$); frequent anxiety (3.4 ± 0.5 points, at $p < 0.01$) in 70.6% of cases (at $p < 0.01$) of predominantly generalized nature (55.9% of cases, at $p < 0.01$) moderate-severe (2.7 ± 0.3 points, at $p < 0.01$); frequent day/night rhythm disorders (3.5 ± 0.4 points, at $p < 0.05$) in 82.4% of cases (at $p < 0.05$) moderate-severe (2.5 ± 0.5 points, at $p < 0.05$); periodic states of disinhibition (2.5 ± 0.3 points, at $p < 0.01$) in 35.3% of cases (at $p < 0.01$) of moderate severity (2.4 ± 0.5 points, at $p < 0.05$); severe distractibility (in 73.5% of cases, at $p < 0.05$)

In these patients, there was a correlation between the severity of perceptual disorders and the severity of day/night rhythm disturbance ($r = 0.73$); the severity of delusional disorders and the severity of anxiety ($r = 0.67$).

In patients with HPD in VD in the LSD, hallucinatory disorders dominated (visual, auditory, and tactile hallucinations), which took the form of hallucinosis, HPD was accompanied by aimless activity, disinhibition, and distractibility. The severity of symptoms in this group was most often moderately severe.

According to the results of the conducted studies, HPD in VD was combined with a wide range of cognitive impairments, which had a certain specificity within the stages of development of VD.

In the structure of CD of patients with VD in MSD, numeracy disorders (errors of serial subtraction in 70.7% of cases, at $p < 0.05$) prevailed; memory (delayed reproduction associated with coding disorders in 63.4% of cases, at $p < 0.05$); attention (distraction and exhaustion in 53.7% of cases, $p < 0.05$); thinking in the form of generalization disorders (78.0% of cases, $p < 0.01$), formal logical operations (82.9% of cases, $p < 0.05$), inference (85.4% of cases, $p < 0.01$), criticism (87.8% of cases, $p < 0.01$).

In this group, a significant correlation was found between the severity of delusional disorders and the severity of delayed replay disorders associated with coding disorders ($r = 0.66$) and between the severity of perceptual disorders and the severity of distraction and attentional exhaustion ($r = 0.73$; $r = 0.68$).

In the structure of cognitive impairments of patients with HPD in VD in the LSD, most often there were violations of praxis (visual-constructive skills in 88.2 % of cases, at $p < 0.05$; writing – in 88.2 % of cases, at $p < 0.05$); gnosis (impaired understanding of instructions, in 88.2% of cases, at $p < 0.05$); attention (inertia, in 88.2% of cases, at $p < 0.05$); speech (errors of phrase repetition, in 91.2% of cases, at $p < 0.05$); orientation in space (in 91.2 % of cases, at $p < 0.05$); own personality (in 70.6% of cases, at $p < 0.05$); dynamics of thinking (slowing down, inertia, perseveration, inconsistency) (in 91.2 % of cases, at $p < 0.05$), motivational component (paralogism, discontinuity and incoherence, in 88.2% of cases, at $p < 0.05$) and criticism (in 91.2% of cases, at $p < 0.05$).

A significant correlation was found between the severity of perceptual disorders and the severity of orientation disorders in one's own personality ($r = 0.65$) and in the location ($r = 0.68$).

The data obtained indicate that in the transition of VD from MSD to LSD, the frequency of cognitive impairment of praxis, gnosis, attention, language and orientation increased (in 70.6–91.2% of cases, at $p < 0.05$) and thinking disorders, including its dynamics, motivational component and criticism, deepened.

The most informative clinical signs in patients with HPD and CD in VD are as follows: attention deficit disorder (DC – (–2.32), MI – 0.30, at $p < 0.04$); day/night rhythm disorder (DC – (–2.25), MI – 0.36, at $p < 0.0001$); verbal forms of aggression (DC – (–3.04), MI – 0.25, at $p < 0.01$); symptoms that are unbearable for the patient and significantly disturb the caregiver (DC – (–3.04), MI – 0.25, at $p < 0.01$).

The most informative clinical signs in patients with HPD and CD in the MSD include: violation of the motivational component of thinking (DC – (–2.04), MI –0.25, at $p < 0.02$); irritability (DC – (–4.93), MI – 0.61, at $p < 0.01$); aggressiveness in verbal form (DC – (–3.75), MI – 0.53, at $p < 0.008$); symptoms that moderately disturb the caregiver and are safe for the patient (DC – (–3.29), MI – 0.38, at

p < 0.02); day/night rhythm disturbance (DC – (–2.20), MI – 0.34, at p < 0.004).

The most informative clinical signs in patients with VD in the LSD were determined as follows: praxis disorder (DC – (–2.90), MI – 0.33, at p < 0.04); state of disinhibition (DC – (–5.05), MI – 0.77, at p < 0.007); anxiety, mainly in a generalized form (DC – (–3.11), MI – 0.56, at p < 0.003); aimless activity (DC – (–3.78), MI – 0.45, at p < 0.03); day/night rhythm disturbance (DC – (–2.32), MI – 0.40, at p < 0.004); distraction (DC – (–2.50), MI – 0.40, at p < 0.008).

Conclusions. The study of the clinical and psychopathological structure of HPD in patients with VD revealed its dependence on the stage of development of the pathological process.

In patients with VD in the MSD, frequent paranoid disorders with a systematized delusional plot of material damage, robbery, theft, relationships and jealousy of moderate severity, which occurred in the form of paranoid delusional disorder, acute paranoia and hallucinosis, dominated the structure of clinical manifestations.

In patients with VD in the LSD, the clinical and psychopathological structure of the HPD was characterized by the prevalence of frequent hallucinatory disorders in the form of visual, tactile and auditory hallucinations of moderate severity, which occurred in the form of paranoia, paranoid delusions and hallucinosis.

Clinical manifestations of HPD in VD were formed in the structure of cognitive disorders, the transformation of which was determined by the stage of development of the pathological process. In patients with HPD in VD in the MSD, the leading CD were disorders of counting; memory, attention. Thinking disorders were manifested in the form of distortion of generalization, inference, formal logical operations, and criticism.

In patients with HPD with VD in LSD, CD were recorded mainly in the form of impairments in praxis; writing; gnosis; attention; speech; orientation in space and in one's own personality. Thinking disorders in patients with HPD were characterized by impaired dynamics, motivational component, and criticism.

Thus, the clinical and psychopathological structure of HPD in patients with VD in the MSD was characterized by the prevalence of paranoid disorders with systematized ideas of damage, robbery, and theft, which were mainly in the form of paranoid delusions. HPD in this stage of VD was accompanied by vagrancy, verbal aggression, day/night rhythm disorders, and low mood in the form of dysphoria. In patients with HPD in VD in the LSD, the clinical picture was dominated by hallucinatory disorders (visual, auditory and tactile hallucinations), which occurred in the form of HPD hallucinosis, accompanied by aimless activity, disinhibition and distractibility. The symptoms in this group were most often moderately severe.

It has been established that the course of HPD in VD is complicated by an increase in the frequency of cognitive impairment (praxis, gnosis, attention, language and orientation) and a deepening of thinking disorders (dynamics, motivational component, criticism) in the transition from the middle to the late stage, which reflects the development of the neurocognitive process.

Following the conducted studies, an algorithm for the diagnosis of cognitive and non-cognitive (HPD and other) disorders at different stages of development of VD has been developed, which is based on the definition of clinical, psychopathological and neuropsychological determinants of the pathological process in the dynamics of its development, allows to improve the diagnosis and differential diagnosis of VD and to carry out timely clinical identification of VD for early intervention and increase the effectiveness of treatment.

The paper presents a categorical and dimensional analysis of HPD and CD in patients with different degrees of development of VD, determines their clinical, psychopathological and phenomenological structure, the interaction of cognitive and non-cognitive components, and types of course. It has been proved that in the structure of cognitive impairment, thinking disorders to a greater extent reflect the mechanisms of formation of HPD in VD, reproducing mainly the psychotic mechanism.

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