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ЛИЧНОСТНЫЕ ОСОБЕННОСТИ И МЕХАНИЗМЫ АДАПТАЦИИ БОЛЬНЫХ С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ И ХРОНИЧЕСКОЙ СЕРДЕЧНОЙ НЕДОСТАТОЧНОСТЬЮ

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Personal Characteristics and Adaptation Mechanisms of Patients with Arterial Hypertension and Chronic Heart Failure

Резюме

Адаптационные процессы при хронических заболеваниях, в том числе при артериальной гипертензии (АГ) и хронической сердечной недостаточности (ХСН), зависят как от личностных особенностей пациента, так и от коморбидности (наличия у больного сопутствующих заболеваний) **Цель исследования:** изучить личностные особенности и механизмы адаптации больных с АГ и ХСН. **Материалы и методы:** Обследовано 122 больных (49 женщин и 73 мужчины, средний возраст 62,9±9,4 лет) с АГ и ХСН. Для диагностики АГ руководствовались рекомендациями по лечению артериальной гипертонии Европейского Общества Гипертонии и Европейского Общества Кардиологов (2013г.). ХСН определяли согласно рекомендациям по диагностике и лечению хронической сердечной недостаточности Общества специалистов по сердечной недостаточности (ОССН), Российского кардиологического общества (РКО) (2016г.). Для оценки коморбидности использовали индекс коморбидности (ИК) Чарлсона; коморбидность расценивали как высокую при ИК ≥6 баллов (60 больных). Для оценки личностных особенностей и общего психического статуса использовалась проективная методика — тест восьми влечений Сонди, опросник Мини-мульт (сокращенный вариант MMPI). Для оценки адаптационных психологических механизмов использовались «Индекс жизненного стиля» и «Копинг-тест». Проводилась оценка когнитивного статуса. **Результаты.** ИК составил 5,3 (IQR:4-7) баллов. Группа больных с АГ, ХСН и высокой коморбидностью отличалась выраженностью депрессивно-ипохондрического профиля по сравнению с пациентами с низкой коморбидностью. Схожие данные были получены при проективном исследовании: в группе с высокой коморбидностью был наиболее выражен фактор D– (депрессивное состояние) (1,7 (IQR:1-2) и 0,9 (IQR:0-1), баллов соотв., p=0,009) и фактор P– (параноидальность) (1,8(IQR:1-2,5) и 1,3(IQR:1-2) баллов соотв., p=0,01). Определены взаимосвязи, позволяющие говорить о единых адаптационных процессах больных с АГ и ХСН в зависимости от коморбидности: у больных с высокой коморбидностью неконструктивные копинг-стратегии («конфронтативный», «бегство-избегание») коррелировали с механизмами психологической защиты «регрессия» (r=0,41, p=0,003), и «замещение» (r=0,39, p=0,001). **Выводы.** Коморбидность оказывает негативное влияние на когнитивные и адаптационные возможности больных с АГ и ХСН, способствует возникновению депрессивно-ипохондрических состояний, сопровождающихся снижением мотивации и приверженности к лечению, что необходимо учитывать при междисциплинарном подходе к данной категории больных.

Ключевые слова: *артериальная гипертензия, хроническая сердечная недостаточность, личностные особенности, механизм адаптации*

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Abstract

Adaptation processes in chronic diseases, including arterial hypertension (AH) and chronic heart failure (CHF), depend both on the personality of the patient and on comorbidity. **Objective:** to study the characteristics of adaptation and mental functioning of patients with hypertension and heart failure with comorbidity (the patient has concomitant diseases). **Design and methods.** 122 patients (49 women and 73 men, average age 62.9 ± 9.4 years) with hypertension and heart failure were examined. AH was diagnosed and evaluated according to guidelines for the treatment of arterial hypertension of the European Society of Hypertension and the European Society of Cardiology (2013). CHF was diagnosed in accordance with the guidelines for the diagnosis and treatment of chronic heart failure of the Society of Heart Failure Specialists, Russian Cardiology Society (2016). Charlson Comorbidity Index (IC) was used to evaluate comorbidity; comorbidity was regarded as high at IC ≥ 6 points (60 patients). To assess personal characteristics and mental status, a projective methodology was used — Sondi's test, a Mini-mult questionnaire (shortened version of MMPI). To assess the adaptive psychological mechanisms were used «Life Style Index» and «Copy Test». Cognitive functions and quality of life were evaluated. **Results.** IC was 5.3 (IQR:4-7) points. The group of patients with hypertension, heart failure and high comorbidity differed in the severity of the depressive-hypochondriacal profile compared with patients with low comorbidity. Similar data were obtained in a projective methodology: in the group with high comorbidity, the most pronounced factor is D– (depression) (1.7 (IQR: 1-2) and 0.9 (IQR: 0-1), points respectively, p = 0.009) and factor P– (paranoid) (1.8 (IQR: 1-2.5) and 1.3 (IQR: 1-2) points respectively, p= 0.01). Relationships have been identified that make it possible to talk about common adaptation processes in patients with AH and CHF depending on comorbidity: in patients with high comorbidity, non-constructive coping strategies («confrontational», «flight-avoidance») correlated with psychological defense mechanisms of the regression type (r=0.41, p=0.003) and replacement (r=0.39, p=0,001). **Conclusions.** Comorbidity has a negative impact on the cognitive and adaptive capabilities of patients with hypertension and heart failure, contributes to the emergence of depressive-hypochondriacal conditions, accompanied by a decrease in motivation and adherence to treatment, which must be taken into account with an interdisciplinary approach to this category of patients.

Key words: *arterial hypertension, chronic heart failure, psychological characteristics, adaptation mechanism*

Conflict of interests

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Introduction

Despite all the progress in diagnosis and therapeutic options, arterial hypertension (AH) management remains a challenge [1]. Poor adherence to therapy is currently considered one of the primary reasons for the low effectiveness of AH management [2]. Single-pill strategy (using fixed combinations as early as the beginning of treatment) is seen as one way to improve adherence to therapy [3]. Adherence to therapy is determined by many factors; personality traits of patients and their motivation are of great importance. Studies show that the cost of medications is not a critical factor, including in Russia [4].

Shaping an attitude towards one's disease is a long process that depends not only on the patient's personality but also on external environmental factors. Adaptation to the disease occurs in several stages, including awareness of this new condition, acceptance or rejection of the diagnosis, and, ultimately, reorganization of living space with the re-evaluation of personal values. The patient's motivation for treatment depends on his/her personality and his/her desire and deliberate decision to comply with the physician's recommendations. In addition, comorbidity, which is currently considered a pandemic by the World Health Organization, influences adherence to treatment [5]. There is an extensive ongoing discussion on the problem of comorbidity (present concomitant pathology), including in patients with hypertension. Comorbidity always causes poor adherence to therapy and an unfavorable prognosis in patients

with cardiovascular diseases. According to local studies, the polymorbidity index is 16.8% [6] higher in patients with arterial hypertension than in patients without AH. According to the literature, the combination of arterial hypertension and chronic heart failure is as high as 85.6%, and that of arterial hypertension and ischemic heart disease — 81.3% [7]. In addition, arterial hypertension is the main risk factor for high comorbidity, which, in turn, worsens the prognosis [8].

Cerebrovascular disease is the second most frequent cause of cognitive impairment (vascular cognitive impairment), which is why the analysis of cognitive functions should be performed as part of comprehensive diagnosis of patients with AH, especially in the elderly population [9]. Despite the contradictory data concerning the choice of the method for evaluating cognitive deficit, «Hypertension in adults» (2020) Clinical Guidelines of the Russian Cardiology Society recommend evaluation of cognitive function in elderly patients with the help of the MMSE test [10].

Comorbidity worsens the prognosis, raises the treatment cost, affects the quality of life, and leads to the consolidation of depressive reactions [11]. Arterial hypertension is associated with depression and anxiety. In addition, depression, hostility, and an increased level of anxiety have a negative effect on adherence to drug therapy in patients with arterial hypertension [12]. According to our previous studies, an obsessive-phobic attitude towards the disease and illness anxiety disorder worsen adherence to therapy in patients with CHF [13].

Particular attention is paid to the so-called cardiovascular comorbidity [14]. Chronic heart failure (CHF) as a component of cardiovascular comorbidity is an unfavorable prognostic factor. The prevalence of CHF is growing globally and within our country. In recent years, it increased to 8.8% [15]. However, the effect of comorbidity on the emotional and motivational components of the personality of the patient with arterial hypertension and chronic heart failure is under-investigated.

The **objective of the study** was to examine personality traits and adaptation mechanisms of patients with AH and CHF with the consideration of their comorbidity.

Materials and methods

A total of 122 patients (49 women and 73 men, mean age 62.9 ± 9.4 years) with arterial hypertension, stage 2–3, grade III (according to Russian Hypertension Classification) and chronic heart failure were examined. This study was approved by the Ethics Committee of Ulyanovsk State University; patients signed voluntary informational consent. Diagnosis of AH was established in accordance with the recommendations of the European Society of Hypertension and the European Society of Cardiology for the management of arterial hypertension (2013). [16]. European recommendations on arterial hypertension (2018) were considered when analyzing the data obtained. [3]. CHF was diagnosed in accordance with the recommendations for the diagnosis and management of chronic heart failure of the Society of Heart Failure Specialists (SHFS), Russian Cardiology Society (RCS) (2016). [17]. To evaluate comorbidity, we used the Charlson comorbidity index (CI); comorbidity was regarded as high for CI ≥ 6 points [13]. Comorbidity was defined as the combined manifestation of two or more chronic diseases related in pathogenesis or present simultaneously in one patient, regardless of the activity of each of them [18]. All patients were divided into two groups depending on the comorbidity grade: 62 patients with low comorbidity (CI < 6 points) and 60 patients with high comorbidity (CI ≥ 6 points). Table 1 presents clinical features of the examined patients with AH and CHF.

Personality traits and mental status were assessed using a projective technique — Szondi test (modified by L. N. Sobchik, 2002), and the Mini-Mult questionnaire (shortened version of MMPI) [19–20]. Adaptive psychological mechanisms were assessed using the Plutchik-Kellerman-Conte Life Style Index Questionnaire and Coping Test [21–22]. Cognitive status was assessed using the Mini-Mental State Examination scale (MMSE) [23]. Clinical Dementia Rating (CDR) scale was used for clinical evaluation of dementia severity. A multidisciplinary team, including different specialists, carried out evaluation.

This paper is a prospective cohort study with a follow-up period of 12 months. The total mortality rate was estimated as the primary endpoint. The study had the following exclusion criteria: acute myocardial infarction; acute cerebrovascular accident (stroke) within six months before inclusion in the study; mental disorders, severe cognitive disorders (moderate to severe dementia) that make it difficult to conduct psychological tests).

Statistical analysis was carried out using the StatSoft Statistica v.10.0.1011.6 software package. Shapiro-Wilk's W test was used to evaluate data distribution in variational series. Depending on the study result, data were presented as M ± SD, where M is the arithmetic mean, SD is standard deviation (with normal distribution), or Me (IQR), where Me is the median, IQR is interquartile range: 25 percentile — 75 percentiles (with distribution other than normal). Student's t-test and Mann-Whitney U test (with distribution other than normal) were used to compare groups. Analysis of categorical data was carried out using Fisher's exact test. A correlation analysis was performed. Differences were considered significant at $p < 0.05$.

Table 1. *Patients with hypertension and chronic heart failure*

Parameters	Patients with hypertension and CHF (n=122)	Patients with hypertension and CHF with low comorbidity (n = 62)	Patients with hypertension and CHF with high comorbidity (n = 60)	p*
Women (n, %)	49 (40,2%)	27 (43,5%)	22 (36,7%)	0,5
Men (n, %)	73 (59,8%)	35 (56,5%)	38 (63,3%)	0,5
Age (M ± SD, years)	62,9±9,4	58,1±8,2	67,9±7,9	<0,0001
The presence of hypertension (All patients had stage 3 hypertension) (n, %):	122 (100%)	62 (100%)	60 (100%)	
AH 2 degrees	61 (50%)	34 (54,8%)	21 (35%)	0,03
AH 3 degrees	61 (50%)	28 (45,2%)	39 (65%)	0,03
Duration of hypertension (M ± SD, years)	11,9 (5;16)	11,4(5;16)	12,4(6;18)	0,4
Duration of CHF (M ± SD, years)	4,4(2;6)	3,5(2;5)	5,5(2;7)	0,003
The presence of CHF (n, %):				
Functional class of CHF (n, %):	122 (100%)	62 (100%)	60 (100%)	
1 FC	7 (5,7%)	5 (8%)	2 (3,3%)	0,2
2 FC	61 (50%)	45(72,6%)	16 (26,7%)	<0,0001
3 FC	54 (44,3%)	12 (19,4)	42 (70%)	<0,0001
By LV ejection fraction (n, %)				
CHF with low EF (less than 40%) (n, %)	26(21,3)	10(16,2%)	16(26,7%)	0,11
CHF with intermediate EF (from 40% to 49%) (n, %)	30(24,7%)	16(25,8%)	14(23,3%)	0,45
CHF with preserved EF (50% or more) (n, %)	66(54%)	36(58%)	30(50%)	0,24
CAD, including	100 (81,9%)	46 (74,2%)	54 (90%)	0,02
myocardial infarction in history (n, %)	31 (25,4%)	7 (11,3%)	24 (40%)	0,0002
Atrial fibrillation (n, %)	18 (14,7%)	6 (9,7%)	12 (20%)	0,09
Atrial fibrillation (n, %)	13 (10,7%)	4 (6,5%)	9 (15%)	0,1
GFR (M±SD, ml/min/1.73 m^2)	63,9±16,2	72,7±13,6	55,9±12,8	<0,0001
BMI (M±SD, kg/m^2)	31,5±7,9	33,3±6,7	29,4±4,6	0,008

Note: AH — hypertension, CAD — coronary artery disease, BMI — body mass index, LV — left ventricle, GFR — glomerular filtration rate (according to the formula CKD EPI, 2011), EF — ejection fraction, FC — functional class, CHF — chronic heart failure
* — differences between the group of patients with low comorbidity and the group of patients with high comorbidity

Results

Charlson Comorbidity Index considering age was 5.3 (IQR: 4–7) points. Table 2 presents the structure of comorbidities in examined patients.

During 12 months of follow-up, 12 (9.8%) patients with AH and CHF died; all patients had high comorbidity.

Assessment of cognitive functions of patients with AH and CHF considering their comorbidities

In the study of the cognitive status of patients with AH and CHF, 68 (55.7%) patients with AH and CHF had predementia cognitive impairment, and one in four patients (30; 24.6%) had mild dementia. Results obtained with the Mini Mental Status Exam (MMSE) did not contradict the results obtained using the Clinical Dementia Rating scale for dementia in patients with AH and CHF.

Patients with AH and CHF performed tasks to assess orientation in time, place and perception — by 99%; attention — by 62%; memory — by 40%; speech and reading — by 90%. Memory (r = –0.41; p = 0.004) and attention (r = –0.45; p = 0.001) deteriorated with age. Also, with increasing comorbidity (dementia not included in this scale), deterioration of parameters indicating the level of attention (r = –0.50; p = 0.0001), memory (r = –0.42; p = 0.0002) and speech was observed (r = –0.40; p = 0.001).

Assessment of personality traits and mental status of patients with AH and CHF considering their comorbidities

Multidimensional diagnosis of personality traits of patients with AH and CHF was carried out using the Mini-Mult questionnaire. Values of all basic scales of the Mini-Mult questionnaire were in the range from 37.9 to 76.1 T-points. Results of this study showed high values of hypochondria, depression, hysteria and psychasthenia scales. According to the results of multivariate analysis, the averaged personality profiles of patients were different depending on their comorbidity (Fig. 1).

Compared with patients with low comorbidity, patients with AH and CHF with high comorbidity had high values on the hypochondria (76.7 ± 10.9 and 70.1 ± 11.3 T-points, respectively, p = 0.01), depression

Table 2. *Characterization of comorbidity in patients with hypertension and CHF*

Parameters	n (%)
Chronic kidney disease (GFR <60 ml/min/1.73 m^2)	60 (49,2%)
Dementia	30 (24,6%)
Type 2 diabetes, including with target organ damage	27 (22,1%) 12 (9,8%)
Peripheral vascular disease	18 (14,8)
Cerebrovascular accident in history, including hemiplegia	15 (12,3%) 2 (1,7%)
Chronic non-specific lung diseases	14 (11,5%)
Peptic ulcer	12 (9,8%)
Connective tissue diseases	10 (8,2%)
Moderate liver damage (viral hepatitis in history)	3 (2,5%)
Malignant tumors without metastases	3 (2,5%)

Примечание: АГ — артериальная гипертензия, СКФ — скорость клубочковой фильтрации (по формуле CKD EPI, 2011), ХСН — хроническая сердечная недостаточность
Note: AH — hypertension, GFR — glomerular filtration rate (according to the formula CKD EPI, 2011), CHF — chronic heart failure

(63.1 ± 11.7 and 56.4 ± 13.8 T-points, respectively, p = 0.004), and psychasthenia (67.5 ± 8.8 and 63.6 ± 11.1 T-points, respectively, p = 0.02) scales, which is typical for a depressive-hypochondriac profile.

The significant complex of hypochondriac depression in the clinical presentation included a pessimistic perception of somatic pathology with a hypertrophic evaluation of its consequences. Patients were dominated by anxiety-phobic emotions, fears of the recurrence of severe crises and heart attacks, long-term treatment with unfavorable outcome, negative social consequences, and futile treatment. In 50% of cases with high comorbidity, patients refused to follow medical instructions and sometimes followed their «own recovery program».

A projective technique — Szondi test — was used to analyze the key drives in the structure of motivation and personality traits of patients with AH and CHF. Key drives largely determine lifestyle, areas of social activity, and have a significant impact on the development of an individual hierarchy of values, which is an integral component in developing an attitude towards a chronic pathological condition. The averaged profile of key drives in patients with AH and CHF is presented in Fig. 2.

Test results revealed that patients with AH and CHF demonstrated average types of reaction without pathological personality traits. According to the obtained profile, patients with AH and CHF are characterized by high anxiety, unstable motivation, emotional lability, and adaptation difficulties [19]. In general, comorbidities did not significantly affect the profile of key drives in patients with AH and CHF. However, the D-factor (depressive state) was most pronounced in patients with high comorbidity compared to patients with low comorbidity: 1.7 (IQR: 1–2) and 0.9 (IQR: 0–1) points, respectively, p = 0.009. Patients with low comorbidity are characterized by optimism, search for new contacts, and high achievement motivation, which is lost in patients with high comorbidity. The P-factor (paranoid) is also

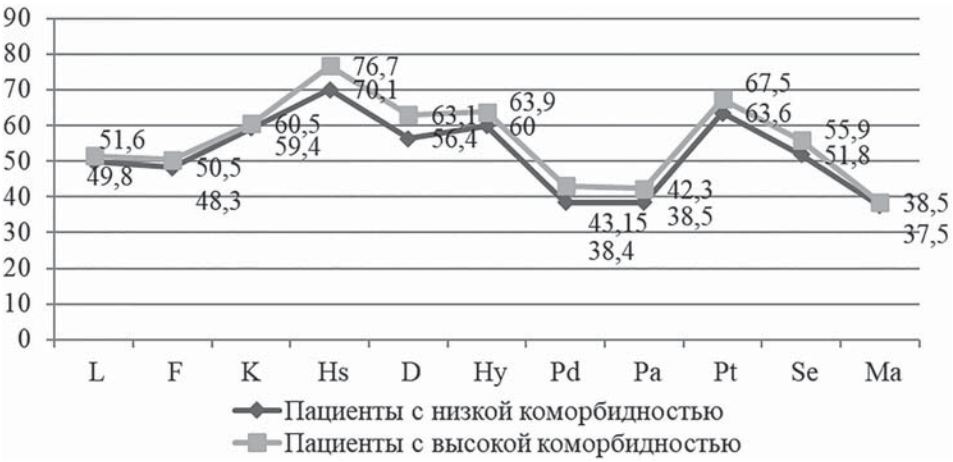

Figure 1. *Averaged personality profile of patients with hypertension and heart failure according to comorbidity*
Note. Scales: L — lies, F — reliability, K — correction, Hs — hypochondria, D — depression, Hy — hysteria, Pd — psychopathy, Pa — paranoia, Pt — psychasthenia, Se — schizoid, Ma — hypomania

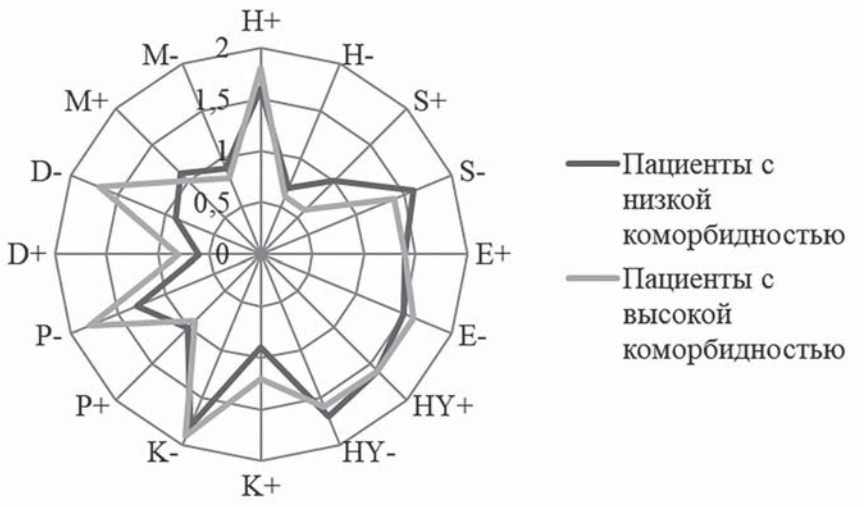

Figure 2. *Averaged profile of drives of patients with hypertension and heart failure according to comorbidity*
Note. Factors: H — sexual indifference; S — sadism-masochism; E — epileptoid tendencies; HY — hysterical tendencies; K — catatonic manifestations; P — paranoia; D — depressive state; M — manic manifestations

more intense in the group of patients with high comorbidity than in the group with low comorbidity: 1.8 (IQR: 1–2.5) and 1.3 (IQR: 1–2) points, respectively, p = 0.01. Patients with high comorbidity and paranoid traits are characterized by suspicion, hostility towards others, a tendency to dramatization and selectivity in contacts, which may influence their adherence to treatment.

Adaptation mechanisms of patients with AH and CHF considering their comorbidities

The severity of all protective mechanisms in patients with AH and CHF did not exceed 60 standard points (Fig. 3).

In general, patients with AH and CHF, regardless of comorbidity level, have the most intense psychological defense mechanisms of «projection» (49.3 (IQR: 33–67) %), «rationalization»" (37.1 (IQR: 25–50) %) and «denial» (35.1 (IQR: 18–45) %) types. The combination of psychological defense mechanisms of the «projection» and «rationalization» types indicates an awareness of the disease as a traumatic situation and its rational interpretation with suppressed emotions. However, the absence of proper emotional response leads to a psychological conflict and a decrease in the significance of traumatic moments [24].

In our study, the level of comorbidity in patients with AH and CHF had no significant effect on the severity of psychological defense mechanisms. There was a downward trend in almost all parameters of the severity of psychological defense mechanisms. A significant decrease in values on any scale of the questionnaire indicates the ineffectiveness of this type

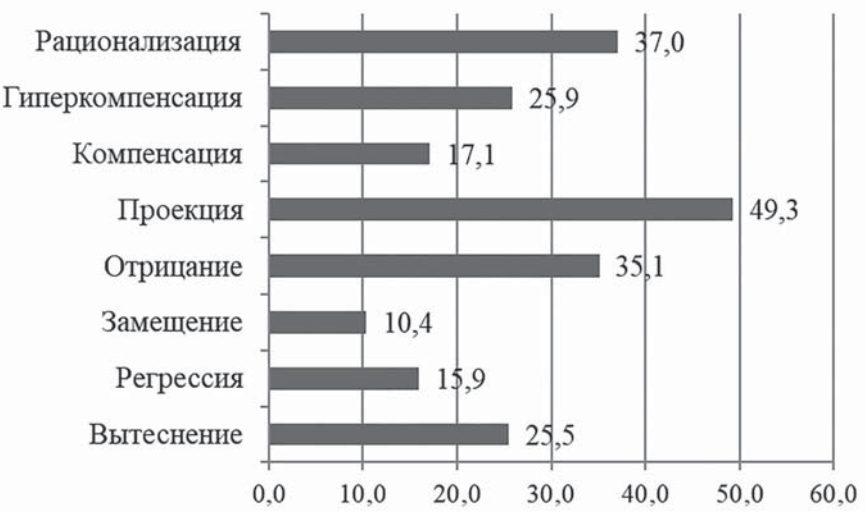

Figure 3. *The severity of the mechanisms of psychological defense in patients with hypertension and heart failure*
Note. The intensity of psychological defense mechanisms in %

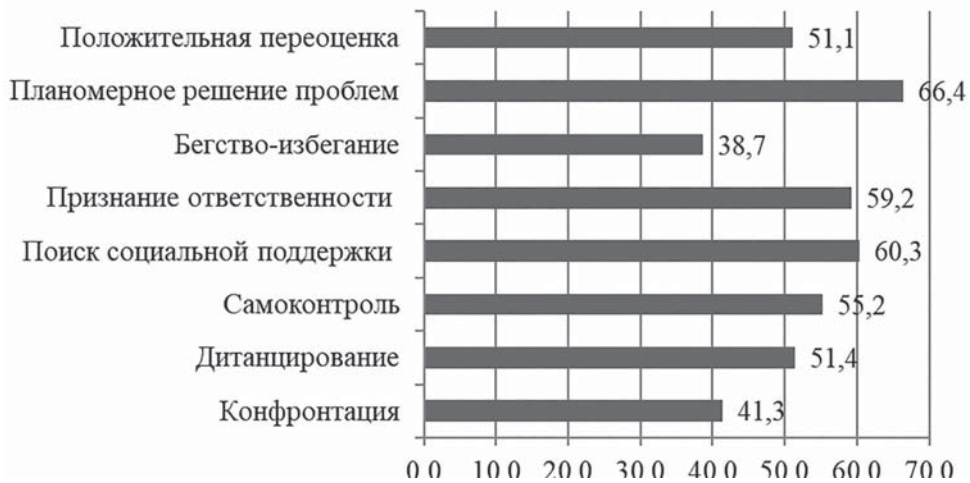

Figure 4. *Copying strategies of patients with hypertension and heart failure*
Note. The intensity of coping strategies in %

of psychological defense, which most likely leads to maladaptation.

The predominant types of coping strategies, regardless of the comorbidity level, in patients with AH and CHF were «systematic problem-solving» (66.4 (IQR: 56–83) points), «seeking social support» (60.3 (IQR: 50–72) points), «acceptance of responsibility» (59.2 (IQR: 42–75) points) (Fig. 4). These coping strategies can be described as relatively constructive and constructive. AH and CHF patients are characterized by active recognition of their role in the problem and the desire to have informational and emotional support from others.

Our study shows that the following constructive mechanisms are more pronounced in patients with low comorbidity than in patients with high comorbidity: «seeking social support» (63.6 (IQR: 50–72) % and 56.9 (IQR: 50–72) % respectively, $p = 0.03$) and «systematic problem-solving» (68.7 (IQR: 52–75) % and 59.8 (IQR: 52–75) %, respectively, $p = 0.02$), which characterize patients' adaptive abilities to use the resources of the external environment for obtaining information and for emotional support.

Direct relationships of non-constructive coping strategies («confrontation», «escape-avoidance») with psychological defense mechanisms of the «regression» ($r = 0.41$, $p = 0.003$) and «substitution» ($r = 0.39$, $p = 0.001$) types were revealed in patients with high comorbidity. For patients with low comorbidity, direct relationships of constructive coping strategies («systematic problem-solving», «seeking social support») with psychological defense mechanisms of the «rationalization» ($r = 0.44$, $p = 0.0004$), «hypercompensation» ($r = 0.40$, $p = 0.02$), and «denial» ($r = 0.39$, $p = 0.03$) types were revealed. The revealed relationships allow defining common adaptation processes in patients with AH and CHF depending on comorbidity.

Discussion

In our study, patients with arterial hypertension generally had comorbidity, including high comorbidity, with a Charlson comorbidity index of more than 6 points (49% of examined patients). Chronic kidney disease is observed in almost one in three patients with cardiovascular disease, including patients with arterial hypertension and chronic heart failure; it leads to poor prognosis, deterioration of quality of life, and higher treatment cost [25]. According to this study, all deceased patients had high comorbidity during the follow-up period. Half of the patients (49%) had chronic kidney disease, which is consistent with data in literature sources. The high prevalence of CKD in our study was also due to the age of the patients and their high comorbidity.

In this study, patients with arterial hypertension were characterized by a depressive-hypochondriac state, which was aggravated by high comorbidity. High level of anxiety complicates targeted efforts and attention focusing for a long time, making long-term compliance with medical recommendations harder. Depression and asthenic syndrome lead to irrational defense methods, a desire to withdraw from society, leading to more focus on somatic problems, and skepticism about the success of treatment. Patients may refuse to fulfill their needs and may not cope with their social roles.

Considering the conventional holistic approach to understanding personality and its studying in normal and pathological states, it becomes relevant to identify the features of psychological defense mechanisms in patients with AH and CHF, and the relationship between the severity of psychological defense and comorbidity [26]. Our study determined common adaptation mechanisms in patients with AH and CHF depending on the level of comorbidity according to the Charlson CI. In addition, patients with high comorbidity were characterized by maladaptation to their pathological state and

consolidation of primitive psychological defense mechanisms. In contrast, patients with low comorbidity used mature psychological defense mechanisms and constructive coping strategies.

Analysis of local studies on adaptation mechanisms showed that, compared to healthy individuals, patients with CHF were characterized by more intense psychological defense mechanisms, including «projection» and «denial» types [27]. Psychological defenses and coping strategies are usually considered as intrinsic ways of responding to stressful situations and forms of adaptation processes [28]. Coping strategies are the most advanced adaptive mechanism that provides a productive interaction between the personality and the environment in both typical and stressful conditions of chronic disease. Comorbidity in patients with AH and CHF negatively affects all components of relationships (cognitive, emotional, behavioral) and contributes to the aggravation of maladaptation to changed lifestyle [26, 29]. Mechanisms that reflect the relationship between high comorbidity and changes in mental life in cases of chronic diseases are diverse, which determines the patient-oriented approach to this category of patients and selection of targets to be modified, including those useful for promoting satisfactory adherence to therapy.

Conclusion

Patients with arterial hypertension and chronic heart failure are characterized by high comorbidity. In addition, high comorbidity aggravates the depression with hypochondriac state in patients with AH and CHF, has a negative effect on adaptive capabilities, which is accompanied by low motivation and adherence to treatment; this fact should be considered when taking an interdisciplinary approach to the treatment of this category of patients.

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Список литературы/ References:

1. Ettehad D., Emdin C.A., Kiran A., et al. Blood pressure lowering for prevention of cardiovascular disease and death: a systematic review and meta-analysis. Lancet. 2016; 387(10022): 957–67. doi: 10.1016/S0140-6736(15)01225-8.
2. Conn V.S., Ruppar T.M., Chase J.A., et al. Interventions to improve medication adherence in hypertensive patients: systematic review and meta-analysis. Curr Hypertens Rep. 2015; 17(12): 94. doi: 10.1007/s11906-015-0606-5.
3. Williams B., Mancia G., Spiering W., et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J. 2018; 39(33): 3021-104. doi: 10.1093/eurheartj/ehy339.
4. Кобалава Ж.Д., Котовская Ю.В., Виллевальде С.В., и др. Проблемы взаимодействия «врач-пациент» и контроль артериальной гипертонии в России. Основные результаты Российской научно-практической программы АРГУС-2. Лечебное дело. 2007; 3: 60-6.
Kobalava Zh.D., Kotovskaja Ju.V., Villeval'de S.V., et al. Problems of interaction "doctor-patient" and control of arterial hypertension in Russia. The main results of the Russian scientific and practical program ARGUS-2. Lechebnoe delo. 2007; 3: 60-6. [In Russian].
5. World Health Organization. Preventing chronic diseases: a vital investment. Geneva: WHO; 2005. p.182. ISBN: 9241563001.
6. Севостьянова Е.В., Николаев Ю.А., Митрофанов И.М., и др. Особенности полиморбидности у больных артериальной гипертензией. Артериальная гипертензия. 2019; 25(2): 200-8. doi: 10.18705/1607-419X-2019-25-2-200-208.
Sevost'janova E.V., Nikolaev Ju.A., Mitrofanov I.M., et al. Features of polymorbidity in patients with arterial hypertension. Arterial hypertension. 2019;25(2):200-8. doi: 10.18705/1607-419X-2019-25-2-200-208. [In Russian].
7. DuGoff E.H., Canudas-Romo V., Buttorff C., et al. Multiple chronic conditions and life expectancy: a life table analysis. Med Care. 2014; 52(8) :688-94. doi:10.1097/MLR.0000000000000166.
8. Ефремова Е.В., Шутов А.М. Коморбидность и прогноз больных при хронической сердечной недостаточности. Журнал сердечная недостаточность. 2014; 5(86): 294-300.
Efremova EV, Shutov AM. Comorbidity and prognosis of patients with chronic heart failure. Journal of Heart Failure. 2014; 5(86): 294-300. [In Russian].
9. Iadecola C., Yaffe K., Biller J., et al. Impact of Hypertension on Cognitive Function: A Scientific Statement from the American Heart Association. Hypertension. 2016; 68(6): e67-e94. doi:10.1161/HYP. 0000000000000005327.
10. Российское кардиологическое общество. Клинические рекомендации «Артериальная гипертензия у взрослых». 2020. 136с. Russian Society of Cardiology. Clinical guidelines «Arterial hypertension in adults».136p. [In Russian].
11. Белялов Ф.И. Выбор и классификация лекарственных препаратов при коморбидных заболеваниях. Архивъ внутренней медицины. 2020; 10(1): 57-60. doi: 10.20514/2226-6704-2020-10 1-57-60.
Belialov F.I. Selection of medications in comorbidity. The Russian Archives of Internal Medicine. 2020; 10(1): 57-60. doi: 10.20514/2226-6704-2020-10-1-57-60 [In Russian].

12. Орлов А.В., Ротарь О.П., Бояринова М.А., и др. Тревожно-депрессивные расстройства — связующее звено между социально-экономическими, поведенческими и биологическими сердечно-сосудистыми факторами риска? Сибирское медицинское обозрение. 2017; (2): 60-6. doi: 10.20333/2500136-2017-2-60-6.
Orlov A.V., Rotar' O.P., Bojarinova M.A., et al. Anxiety-depressive disorders — the link between socioeconomic, behavioral and biological cardiovascular risk factors? Siberian Medical Review. 2017; (2): 60-6. doi: 10.20333/2500136-2017-2-60-6. [In Russian].
13. Ефремова Е.В., Шутов А.М., Сабитов И.А. Коморбидность и приверженность к лечению при хронической сердечной недостаточности. Журнал сердечная недостаточность. 2013; 1(75): 40-6.
Efremova E.V., Shutov A.M., Sabitov I.A. Comorbidity and adherence to treatment in chronic heart failure. Journal of heart failure. 2013; 1(75): 40-6. [In Russian].
14. Оганов Р.Г. Сосудистая коморбидность: общие подходы к профилактике и лечению. Рациональная фармакотерапия в кардиологии. 2015; 11(1): 4-7.
Oganov R.G. Vascular comorbidity: general approaches to prevention and treatment. Rational pharmacotherapy in cardiology. 2015; 11 (1): 4-7. [In Russian].
15. Фомин И.В. Хроническая сердечная недостаточность в Российской Федерации: что сегодня мы знаем и что должны делать. Российский кардиологический журнал. 2016; (8): 7–13. doi: 10.15829/1560-4071-2016-8-7-13.
Fomin I.V. Chronic heart failure in the Russian Federation: what we know today and what we should do. Russian Journal of Cardiology. 2016; (8): 7–13. doi: 10.15829/1560-4071-2016-8-7-13. [In Russian].
16. Mancia G., Fagard R., Narkiewicz K., et al. 2013 ESH/ESC Guidelines for the management of arterial hypertension: the Task Force for the management of arterial hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). J Hypertens. 2013; 31(7): 1281-357. doi: 10.1097/01.hjh.0000431740.32696.cc.
17. Мареев В.Ю., Фомин И.В., Агеев Ф.Т., и др. Клинические рекомендации. Хроническая сердечная недостаточность (ХСН). Журнал Сердечная Недостаточность. 2017; 18(1): 3–40. doi: 10.18087/rhfj.2017.1.2346.
Mareev V.Ju., Fomin I.V., Ageev F.T., et al. Clinical guidelines. Chronic heart failure (CHF). Journal of Heart Failure. 2017; 18(1): 3–40. doi: 10.18087/rhfj.2017.1.2346. [In Russian].
18. Оганов Р.Г., Денисов И.Н., Симаненков В.И., и др. Коморбидная патология в клинической практике. Клинический рекомендации. Кардиоваскулярная терапия и профилактика. 2017; 16(6): 5-56. doi: 10.15829/1728-8800-2017-6-5-56.
Oganov R.G., Denisov I.N., Simanenkov V.I., et al. Comorbidities in practice. Clinical guidelines. Cardiovascular Therapy and Prevention. 2017; 16(6): 5-56. doi: 10.15829/1728-8800-2017-6-5-56. [In Russian].
19. Собчик Л.Н. Метод портретных выборов — адаптированный тест Сонди. Практическое руководство. СПб.: Речь; 2013. 125 с. ISBN 978-5-9268-1385-9.
Sobchik L.N. The portrait election method is Sondi's adapted test. A practical guide. SPb.: Rech'; 2013.125 s. ISBN 978-5-9268-1385-9. [In Russian].
20. Березин Ф.Б., Мирошников М.П., Соколова Е.Д. Методика многостороннего исследования личности (ММИЛ): структура, основы интерпретации, некоторые области применения. Предисл. Т.Барлас. М.: Издательство «БЕРЕЗИН ФЕЛИКС БОРИСОВИЧ»; 2011. 320 с.
Berezin F.B., Miroshnikov M.P., Sokolova E.D. The methodology of multilateral personality research (MMIL): structure, principles of interpretation, some areas of application. Foreword T. Barlas. M.: Publishing house «BEREZIN FELIKS BORISOVICH»; 2011.320 p. [In Russian].
21. Вассерман Л.И., Ерышев О.Ф., Клубова Е.Б., и др. Психологическая диагностика индекса жизненного стиля. Под ред. Л.И. Вассерман СПб.: Санкт-Петербургский научно-исследовательский психоневрологический институт им. В.М. Бехтерева. 2005; 54 с.
Vasserman L.I., Eryshev O.F., Klubova E.B., et al. Psychological diagnosis of life style index. Ed. L.I. Wasserman St. Petersburg: St. Petersburg Psychoneurological Research Institute V.M. Bekhterev. 2005; 54 p. [In Russian].
22. Крюкова Т.Л., Куфтяк Е.В. Опросник способов совладания (адаптация методики WCQ). Журнал практического психолога. 2007; 3: 93-112.
Krjukova T.L., Kuftjak E.V. Questionnaire of coping methods (adaptation of the WCQ technique). Journal of the practical psychologist. 2007; 3: 93-112. [In Russian].
23. Tsoi K.K.F., Chan J.Y.C., Hirai H.W., et al. Cognitive Tests to Detect Dementia: A Systematic Review and Meta-analysis. JAMA Intern Med. 2015; 175(9): 1450-8. doi:10.1001/jamainternmed.2015.2152.
24. Долгова В.И., Кондратьева О.А. Психологическая защита. М.: Издательство Перо; 2014; 160 с.
Dolgova V.I., Kondratyeva O.A. Psychological protection. M: Pero Publishing House; 2014. 160 p. [In Russian].
25. Макеева Е.Р., Шутов А.М., Серов В.А. Хроническая болезнь почек влияет на прогноз и стоимость стационарного лечения больных с хронической сердечной недостаточностью. Нефрология. 2010; 14(2): 51-5.
Makeeva E.R., Shutov A.M., Serov V.A. Chronic kidney disease affects the prognosis and cost of inpatient treatment of patients with chronic heart failure. Nefrologija = Nephrology. 2010; 14(2): 51-5. [In Russian].
26. Мясищев В.Н. Психология отношений Под ред. А.А. Бодалева. М.: МПСИ. 2004; 400 с.
Mjasishhev V.N. Psychology of Relations Ed. A.A. Bodaleva. M.: MPSI. 2004; 400 p. [In Russian].
27. Альберт М.А., Биктимиров Т.З., Шутов А.М., и др. Приверженность к лечению и личностные особенности больных с хронической сердечной недостаточностью. Ученые записки Ульяновского государственного университета. 2008; 1(13): 6–9.
Al'bert M.A., Biktimirov T.Z., Shutov A.M., et al. Adherence to treatment and personality characteristics of patients with chronic heart failure. Scientific notes of the Ulyanovsk State University. 2008; 1(13): 6–9. [In Russian].
28. Ташлыков В.А. Психологическая защита у больных неврозами и с психосоматическими расстройствами: руководство для врачей. Под ред. В.А. Ташлыков. СПб.: Издание Санкт-Петербургского института усовершенствования врачей. 1992; 21 с.
Tashlykov V.A. Psychological protection in patients with neurosis and with psychosomatic disorders: a guide for doctors. Ed. Tashlykov V.A. SPb.: Publication of the St. Petersburg Institute for Advanced Medical Studies. 1992; 21 p. [In Russian].
29. Медведев В.Э. Взаимосвязь личностных расстройств и сердечно-сосудистых заболеваний: соматоцентрические концепции. Архивъ внутренней медицины. 2014; (1): 70-3.
V.E. Medvedev. The relationship between personality disorders and cardiovascular disease: somatocentric concepts. The Russian Archives of Internal Medicine. 2014; (1): 70-3. [In Russian].