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Psychological Deficiency Status of Elderly Patients with Age-Associated Comorbid Cardiopathology

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Objectives: With increasing age, the likelihood of cognitive impairment, anxiety-depressive syndrome increases among patients with comorbid arterial hypertension (AH) and coronary heart disease (CHD), which are rarely analyzed among the above-mentioned contingent. This study aimed to study the features of the psychological deficit profile of elderly patients with age-associated comorbid pathology.
Methodology: During inpatient treatment of patients aged 60-74 years, cognitive impairment, anxiety and depression were studied in 212 patients with isolated hypertension, 208 patients with isolated coronary artery disease and 223 patients with comorbid hypertension and coronary heart disease (AH+CHD). The patients of these groups are comparable in terms of basic demographic and medical characteristics, the diseases were in the compensation stage. The study did not include patients of other age categories, with preasthenia and senile asthenia syndrome. Cognitive dysfunction was assessed on the Mini-Mental-State-Examination scale, depression and anxiety on the Hospital anxiety and depression scale (HADS).
Results: Among patients with isolated AH, the average MMSE score was 24,7±0,3, isolated CHD – 21,3±0,2 and comorbid AH and CHD – 14,2±0,2 with a statistically significant difference in all groups ($p<0,001$). The average score of the anxiety level reached 8,4±0,2, 9,1±0,2 and 11,2±0,3 points, respectively, with a significant difference between the groups. According to the HADS-D scale, the average depression level score among the selected clinical groups was 8,7±0,3; 9,6±0,2 and 11,5±0,4 points, respectively, with a significant difference in all cases.
Conclusion: Comorbid AH and CHD has the most negative impact on the psychological deficit profile of elderly patients than the presence of isolated AH or CHD.

Keywords: elderly; psychological deficit profile; cognitive impairment; depression; arterial hypertension; coronary heart disease

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INTRODUCTION

A significant body of information has been accumulated regarding the role of psychosocial risk factors (FR) in the development and progression of cardiovascular diseases (CVD), especially coronary heart disease (CHD). Anxiety, depression, low socio-economic status, social isolation, stress at work or at home, post-traumatic stress disorder, anger and hostility, personality type D increase the risk of developing CVD in healthy people and worsen the prognosis in patients with cardiovascular pathology. This is reflected in the European[1] and Russian national[2] recommendations for the prevention of CVD, as well as in the thematic document of the European Association for the Prevention of CVD and Rehabilitation.[3] In addition, in recent years, there has been a growing understanding of the protective role of positive psychological factors opposing these FRS. Positive manifestations of affect – emotional well–being, optimism, satisfaction with one's life and confidence in its meaningfulness - are associated with a decrease in general and cardiovascular mortality, as well as the frequency of complications.[4]

Despite the significant evidence base regarding the contribution of psychosocial factors to the risk of developing CVD[5], the possibility of reducing the risk of deaths in the correction of psychosocial FR, for example, in the drug treatment of depression in patients with CVD has not been established.[6] Nevertheless, in the European Recommendations for the prevention of CVD, the identification of psychosocial FR by means of clinical interviews or standard questionnaires has a class of recommendations IIA[1], since psychosocial FR may be associated with obstacles to successful lifestyle changes and adherence to drug therapy both in persons at high risk of developing CVD and in patients with confirmed CVD.[7,8] In addition, it should be taken into account that the presence of psychosocial FR has negative impact on the quality of life, and their correction in patients with CVD is quite effective, including when using non-drug psychological interventions, such as psychotherapy, psychological

counseling, stress management, various practices aimed at increasing awareness.[9]

Anxiety-depressive disorders are widespread among patients with arterial hypertension (AH), reaching 60%.[10] In addition, against the background of both isolated hypertension and CHD, and comorbid (combined) hypertension and CHD, patients develop cognitive impairments of varying severity, but studies on changes in mental function in CHD are limited.[11]

The relevance of studying the psychological deficit profile in patients with coronary heart disease and hypertension is due to the increased risk of suicidal thoughts and suicide of patients due to depression and especially among the elderly.[12] And, despite the recommendations of the American Heart Association[13] to screen depression and anxiety among cardiac patients, this is performed extremely rarely both in the USA and other countries, including the Russian Federation. In previous studies, the studied groups of patients were heterogeneous in age[14,15], and among psychological deficits, only anxiety-depressive disorders were analyzed. In this study, we have tried to study the features of the psychological deficit profile of elderly patients with age-associated comorbid pathology.

METHODOLOGY

Study Design: The design of this study is shown in Figure 1. The study included patients aged 60-74 years with hypertension and coronary heart disease in the compensation stage, who had no signs of asthenia and senile asthenia.

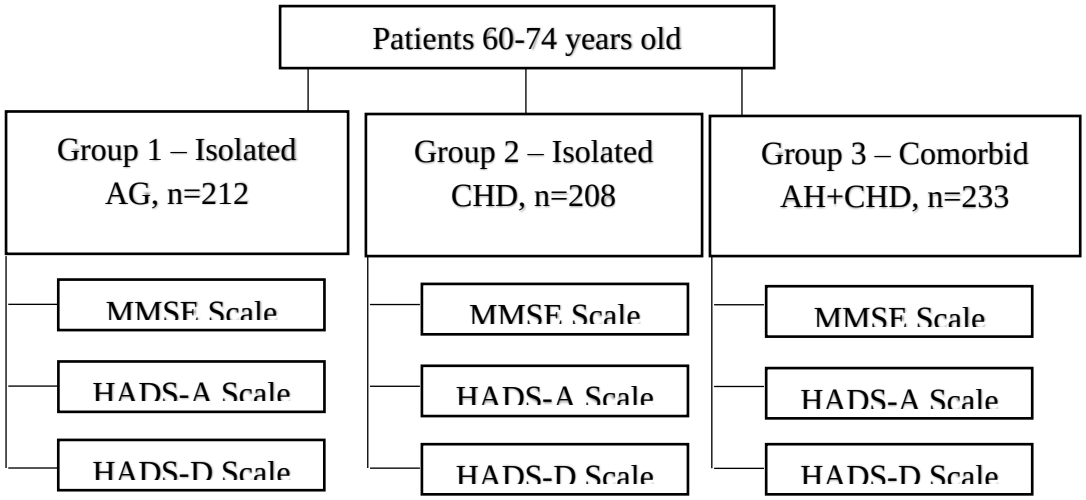

Figure 1: Research design

Patients were included in the study after receiving written consent for examination and the use of the results obtained for scientific purposes. The study was conducted in compliance with moral and ethical norms and principles of good clinical practice ("Good Clinical Practice").

Determination of cognitive impairment and anxiety level: The definition of cognitive impairment was carried out according to the repeatedly validated Mini-Mental-State-Examination (MMSE) scale.[16] Cognitive impairment was assessed taking into account the scores: less than 13 points – severe dementia, 13-18 points – moderate dementia, 19-23 points – mild dementia, 24-27 points – moderate cognitive disorders, 28-30 points – subjective cognitive disorders.

The level of anxiety and depression was determined by the hospital anxiety and depression scale – Hospital anxiety and depression scale (HADS).[17] When analyzing the results of this scale, the following criteria were adhered to: 0-7 points – absence of anxiety and depression, 8-10 points – subclinical anxiety and depression, 11 points or more – clinically expressed anxiety and depression.

Diagnosis AH and CHD: The diagnosis of hypertension was carried out in accordance with the "Clinical recommendations. Arterial hypertension in adults".[18] The diagnosis of coronary heart disease was performed taking into account the criteria of the clinical recommendations "Stable coronary heart disease".[19]

Data Analysis: The statistical analysis was carried out using the software package "Statistica 10.0" and included the determination of the average values (M) of the level of anxiety, depression and cognitive impairment, standard errors (m) of the average values. The normality of the parameters was determined in

accordance with the Shapiro-Wilk normality criterion. The comparison of the average values of the level of anxiety, depression and cognitive impairment in three selected groups of patients with cardiological pathology was carried out according to the Wilkinson criterion. The values of $p<0.05$ were considered statistically significant.

RESULTS

The average age of patients in group 1 was 69.2±1.9 years, group 2 – 70.4±2.5 years, group 3 - 68.9±2.0 years ($p>0.05$). The average levels of depression on the HADS-D scale were statistically higher among patients with comorbid hypertension and coronary heart disease compared with representatives with isolated hypertension and isolated coronary heart disease ($p<0.01$) (Fig. 2).

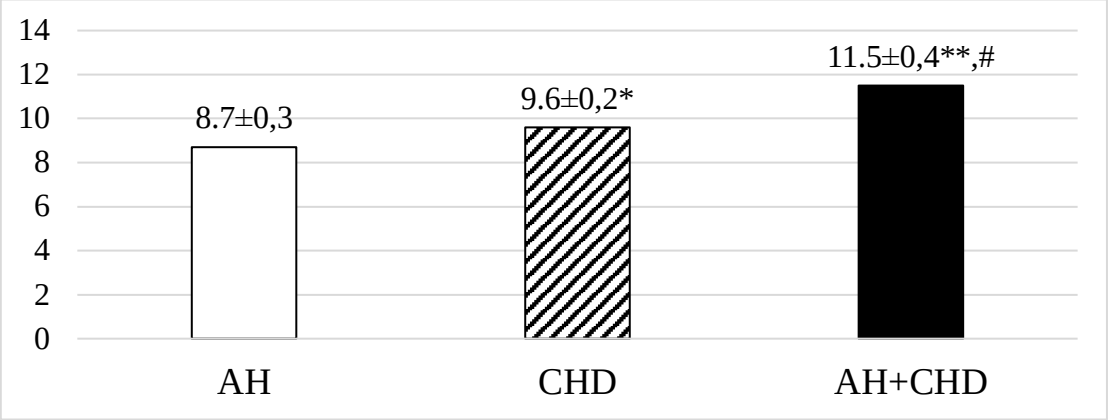

Figure 2: The level of depression in elderly patients with isolated AH, isolated CHD and comorbid AH+CHD (M±m, points)

***p<0,01 between patients with isolated AH and isolated CHD,**
****p<0,01 between patients with isolated AH and comorbid AH+CHD,**
#p<0,01 between patients with isolated CHD and comorbid AH+CHD

The average values of anxiety on the HADS-A scale in patients with comorbid hypertension and CHD were statistically significantly higher than in patients with isolated hypertension and isolated CHD ($p<0.01$) (Fig. 3).

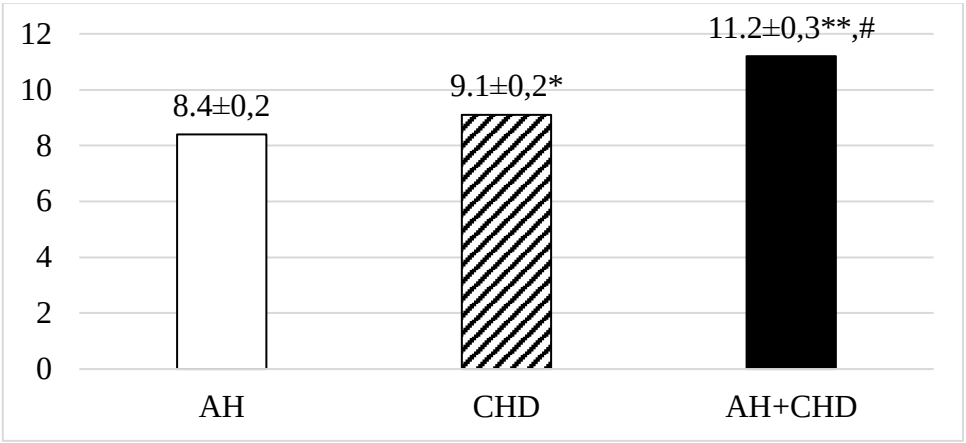

Figure 3: The level of anxiety in elderly patients with isolated AH, isolated CHD and comorbid AH+CHD (M±m, points)

***p<0,01 между пациентами с изолированной АГ и изолированной ИБС,**
****p<0,01 между пациентами с изолированной АГ и коморбидной АГ+ИБС,**
#p<0,01 между пациентами с изолированной ИБС и коморбидной АГ+ИБС
***p<0,01 between patients with isolated AH and isolated CHD,**
****p<0,01 between patients with isolated AH and comorbid AH+CHD,**

#p<0,01 between patients with isolated CHD and comorbid AH+CHD

The results of cognitive impairment on the MMSE scale in the form of an average value ± average error are shown in Figure 4.

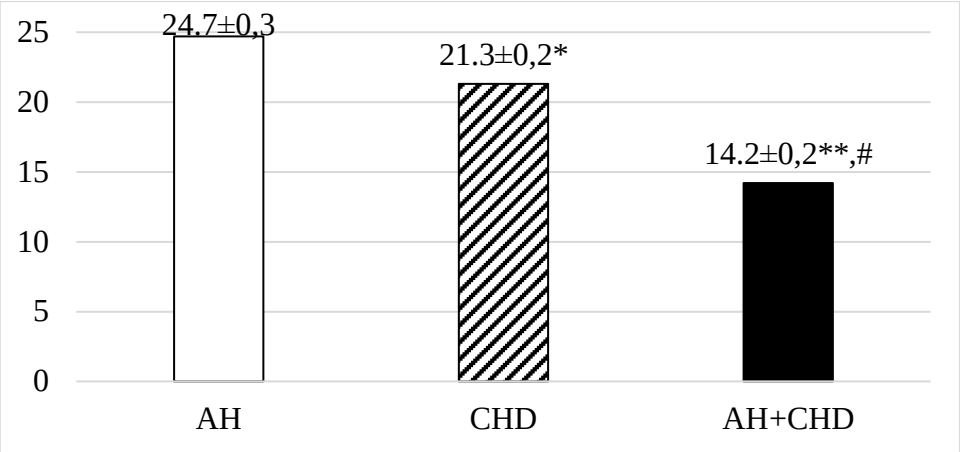

Figure 4: Cognitive impairment among patients aged 60-74 years with isolated AH, CHD and comorbid AH+CHD on the MMSE scale (M±m, points)

***p<0,001 between patients with isolated AH and isolated CHD,**
****p<0,001 between patients with isolated AH and comorbid AH+CHD,**
#p<0,001 between patients with isolated CHD and comorbid AH+CH

The values of the average scores of the MMSE scale were analyzed using the Wilkinson criterion and significant differences were found in all three groups. Thus, the highest average score was found in patients aged 60-74 years with isolated hypertension and was statistically significantly different from patients aged 60-74 years with isolated coronary artery heart com rightorbid (combined) hypertension and coronary heart disease (p<0.001).

DISCUSSION

Cognitive impairments in patients aged 50-64 with coronary heart disease corresponded to an average score of 25.3±0.21 on the MMSE scale,[20] which is significantly higher than the indicator we established and, in our opinion, is associated with a younger age of those examined in the previous study. This is confirmed by the results of a cross-observational study with an assessment of the cognitive function of patients aged 45 to 65 years with isolated hypertension according to the Montreal Cognitive Assessment Scale, when the average score was below 26.0 in 93.3% of participants.[21] The average score was 18.9, while 51.6% of participants suffered from cognitive impairment and indicates that the majority of participants had an average score below the normal range. Among patients with isolated coronary artery disease according to the Montreal Cognitive Assessment Scale, the average score was 25.3±3.84[11] and was similar to the average score on a similar scale in patients aged 45 to 65 with isolated hypertension,[21] but higher than the MMSE scale we established in patients with isolated hypertension (24.7±0.3 points) and isolated coronary heart disease (21.3±0.2 points). However, in contrast to previous studies, we have shown a pronounced negative effect on cognitive impairment of comorbid hypertension and coronary heart disease, rather than isolated hypertension and isolated coronary heart disease.

Our results confirm that anxiety-depressive and cognitive impairments of varying severity are present in patients aged 60-74 with isolated hypertension and isolated coronary artery disease and corresponded to subclinical depression, which is consistent with previously obtained data,[22] but the average depression score in the above publication was significantly lower than we established.

In the Russian cohort of patients aged 55 to 96 years with hypertension and coronary heart disease, that is, in a very heterogeneous age group, compared with patients of the same age with isolated hypertension, there were no differences in the average value of the HADS-A scale, which amounted to 7.7±4.3 and 7.4±4.2 points, respectively,[7] which is significant lower than in our study. In relation to depression in patients 55-96 years old with hypertension and coronary heart disease, the situation is the opposite,[7] when the average score on

the HADS-D scale is statistically significantly higher (7.4±3.9 points) versus 6.7±3.6 points in patients 55-96 years old with hypertension ($p<0.001$).

According to the Beck scale, the average depression score in patients with resistant hypertension was statistically significantly higher (3.0-11.5) compared to the control group – 1-6 points ($p<0.05$) [23]. A similar pattern has been established for the level of anxiety on the HAM-A scale in both patients with hypertension and coronary heart disease.[24] Among 18-64-year-old patients living in the Arctic of Russia, the level of anxiety on the HADS–A scale in 34.7% in CHD corresponded to subclinical anxiety and in 20.4% to clinically expressed anxiety, and in isolated hypertension - in 24.3% and 16.2%, respectively.[25]

The present study has some limitations. Anxiety and depression in patients aged 60-74 years can be not only a consequence of isolated hypertension and CHD, comorbid hypertension and CHD, but also a cause in patients with this cardiopathology. Another limitation is the use of the HADS and MMSE screening scales to assess anxiety, depression and cognitive impairment, but did not include assessments by mental health professionals.

The strengths of the study are: examination of patients of fucking by. age in all three formed clinical groups; separate study of depression, anxiety and cognitive impairment in patients with isolated hypertension, isolated coronary artery disease and comorbid hypertension and coronary heart disease; analysis of all components of the psychological domain.

CONCLUSION

Comorbid hypertension and coronary heart disease most negatively affects all components of the psychological deficit profile of elderly patients, causing the formation of moderate dementia, clinically pronounced anxiety and depression. Isolated hypertension and isolated coronary artery disease contribute to the development of less pronounced deficits of the psychological domain.

AUTHORS' CONTRIBUTION

AV: Concept and design, data acquisition, interpretation, drafting, final approval, and agree to be accountable for all aspects of the work. NA: Data acquisition, interpretation, drafting, final approval and agree to be accountable for all aspects of the work.

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