

HEART RATE VARIABILITY AND Q-T INTERVAL DURATION IN ELDERLY PATIENTS WITH CHRONIC HEART FAILURE

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Abstract: this article discusses the heart rate variability of older people with depressive disorders, as well as the duration of the Q-T interval. The high informativeness of the spectral indices of HRV, especially the index of vagosympathetic interaction in assessing the vegetative status of patients with CHF with concomitant depression, has been established. The ascertained violations of psychological status contribute to the deterioration of the processes of electrical repolarization of the myocardium of the heart. Reduced heart rate variability and prolonged QT interval in patients with advanced heart failure and comorbid depression, which may increase the risk of sudden cardiac death.

Keywords: heart variability, heart failure, advanced age.

ВАРИАБЕЛЬНОСТЬ СЕРДЕЧНОГО РИТМА И ДЛИТЕЛЬНОСТЬ ИНТЕРВАЛА Q-T У ПОЖИЛЫХ БОЛЬНЫХ С ХРОНИЧЕСКОЙ СЕРДЕЧНОЙ НЕДОСТАТОЧНОСТЬЮ

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Аннотация: в данной статье рассматривается вариабельность сердечного ритма пожилых людей с депрессивными расстройствами, а также длительность интервала Q-T. Установлена высокая информативность спектральных показателей ВРС, особенно индекса вагосимпатического взаимодействия, в оценке вегетативного статуса больных ХСН с сопутствующей депрессией. Констатированные нарушения психологического статуса способствуют ухудшению процессов электрической реполяризации миокарда сердца. Снижение вариабельности ритма сердца и удлинение длительности интервала QT у пациентов с ХСН пожилого возраста и коморбидной депрессией могут повысить риск развития внезапной сердечной смерти.

Ключевые слова: вариабельность сердца, сердечная недостаточность, пожилой возраст.

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Relevance . Chronic heart failure (CHF) is one of the most frequent complications of many cardiovascular diseases and is detected in 6-10% of people over 60 years of age [1]. About 80% of patients with CHF are older people [2].

Recently, the problem of the interaction between diseases of the cardiovascular system with comorbid depressive disorders has been of great interest among cardiologists [1, 3].

Up to 60% of all deaths in patients with CHF are due to sudden cardiac death (SCD) [5, 6, 7].

In this regard, of particular relevance is the problem of identifying in patients with CHF the risk of sudden cardiac death for the purpose of its active correction.

One of the most studied risk factors for sudden cardiac death is the reduction of heart rate variability (HRV) and the prolongation of the Q-T interval [2, 4].

To date, a large amount of data has been collected, indicating a close relationship between heart rate variability and the risk of developing life-threatening ventricular arrhythmias.

Reduction of HRV is associated with sympathetic activation, myocardial hypertrophy, cardiac cavity remodeling, myocardial dysfunction, ventricular arrhythmias, development and progression of heart failure [4].

Considering the above, it is important to study the effect of depressive disorders on heart rate variability and the duration of the Q-T interval in elderly patients with CHF, which will make it possible to develop methods for preventing the risk of sudden cardiac death [2].

The purpose of this study: to study the heart rate variability and the duration of the Q-T interval in elderly patients with chronic heart failure with comorbid depressive disorders.

Materials research methods. The work was performed on the basis of the cardiology department of the Clinic of the AGMI of the city of Andijan (Republic of Uzbekistan). The study included 90 patients with CHF I-III FC aged from 60 to 74 years. The formulation of the diagnosis was carried out according to the classification of the society of specialists in heart failure (OSSN 2002). The patients included in the study were divided into 2 groups: Group I (main) comprised 60 patients with comorbid depressive disorders, group II (comparisons) included 30 patients with chronic heart failure without depression .

Results and discussions

Initially, the total score on the HADS scale in the group of patients with CHF with depression averaged 8.5 ± 2.1 , and in the comparison group 4.9 ± 1.8 . The presence of affective disorders in patients of the main group was confirmed by the Beck Scale (BDI): in 34 patients, light depressive disorders of the situational-neurotic genesis were found (19-24 points). True depression was observed in 26 patients.

In percentage terms, severe depression in patients with III FC CHF was significantly higher than among patients with FC I and II and averaged 51.6%. In elderly patients with CHF, the frequency of lung depressive disorders was 56.7% in total, and they were most frequently detected among patients with CHF II FC (76.9%) (Fig. 1).

Thus, when using two methods for assessing depression in elderly patients with chronic heart failure, comparable results were obtained: the severity of depressive disorders increases with an increase in the functional class of CHF.

Depending on the etiology of CHF in the main group, two subgroups emerged. The first consisted of 28 patients in whom the leading cause was hypertension (GB) the second - 32 patients with coronary artery disease. In the case of a combination of CHD and GB, CHD was considered the main cause of CHF due to its pronounced effect on HRV indices. The frequency of pronounced affective disorders in patients with coronary artery disease was significantly higher than in patients with hypertension. True depression was observed in patients with CHF III FC (73%) of ischemic etiology. Mild depressive disorders of situational neurotic genesis were observed more often in patients with IIPK CHF 57%. Thus, pronounced depressive disorders were more often observed in patients with ischemic genesis of CHF with FC III. Mild affective disorders are more often ascertained among patients with hypertensive disease with IIFC CHF.

To identify the features of heart rate variability in elderly people with chronic heart failure, a comparison of HRV values was performed depending on depressive disorders. Such a comparison was carried out both as a whole and depending on the leading cause of CHF. In general, there was a decrease in the total power of the HRV spectrum, in contrast to persons of the same age group of CHF without depression. When considering LF / HF in patients with CHF without depression, a relative shift towards the activity of the sympathetic part of the autonomic nervous system (LF / HF-1,15) was noted. On average, TP in patients with CHF with affective disorders was reduced by almost three times compared with patients without depression. The largest contribution to TP is stated in the percentage of low-frequency and very low-frequency components (Table 2). These changes indicate a more pronounced decrease in parasympathetic activity and, accordingly, an increase in sympathicotonia in patients with CHF, burdened by the presence of depression, compared with those without depression.

The frequency of signs of depression in patients with III FC CHF of older age was greater than the severity of affective disorders in patients with FCI CHF I-II.

During the correlation analysis, an average statistically significant inverse correlation was established between depressive disorders and such HRV indices as TP ms², HF ms², LF ms², VLF ms². The most pronounced correlation was found for the low-frequency component of HRV LF ($r_s = -0.42$ $p < 0.05$). A weak inverse correlation was found between the severity of depressive disorders and LF / HF, HF%, LF%, VLF% (Table 3). In this case, the relationship between LF / HF was statistically significant, and for HF%, LF%, VLF% statistical significance was not detected. The lack of correlation in these indicators can be explained by a significant variation in values due to individual differences in HRV.

The actual values of the duration of the QT interval according to the data obtained in our study significantly exceeded the proper values in both groups of patients. This indicates asynchronous repolarization in cardiomyocytes in CHF. In the presence of depression, the prolongation of the QT interval in patients is 12.5% more than in patients without clinical manifestations of affective disorders (511.9 ± 4.9 against 447.7 ± 10.6) ($p < 0.001$). Analyzing the parameters of the corrected QT interval, we found an increase in this value by an average

of 73 ms in the group of patients with CHF with comorbid depressive disorders. The dispersion of the corrected interval was also significantly higher in the group of patients with CHF with depressive disorders 70.8 ± 0.7 ms.

Conclusions: Elderly patients with chronic heart failure with affective disorders are more likely to experience mild depressive disorders (56.6%); true depression was less pronounced (43.4%).

In elderly people, the relationship between the severity of affective disorders and the etiology of chronic heart failure has been revealed, being more pronounced in CHD.

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