



Figure 1 – Risk groups based on SCORE

LITERATURE

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ANALYZING FEATURES OF ECHOCARDIOGRAPHIC PARAMETERS IN PATIENTS WITH ARTERIAL HYPERTENSION DEPENDING ON THE PRESENCE OF CONCOMITANT CORONARY HEART DISEASE

Introduction

Arterial hypertension, commonly known as high blood pressure, is a prevailing global health concern affecting a significant portion of the population. It is a multifactorial disorder, often accompanied by several comorbidities, including coronary heart disease (CHD). When arterial hypertension and CHD coexist, the management and treatment of both conditions become crucial for patient well-being. Echocardiography, a non-invasive imaging technique, enables the comprehensive evaluation of cardiac structure, function, and hemodynamics. By utilizing various echocardiographic parameters, clinicians can gain valuable insights into the underlying pathology and progression of arterial hypertension and its association with CHD. Consequently, a thorough analysis of these parameters becomes imperative for understanding the impact of concomitant CHD in hypertensive individuals. This research article aims to investigate the influence of concomitant coronary heart disease on echocardiographic parameters in individuals with arterial hypertension. By elucidating the distinct features and variations in echocardiographic parameters, we can enhance our understanding of the interplay between these two conditions and develop more tailored diagnostic and therapeutic strategies for these patients [1–4].

Goal

The purpose of this article is to analyze echo parameters in patients with arterial hypertension depending on the presence of concomitant coronary heart disease for the better understanding of their effect on the functioning of the heart.

Material and methods of research

Total number of 50 including 25 Hypertension only (group 1) and 25 hypertension with IHD (group 2) patients in the Hospital for the Disabled of Great Patriotic War were taken into consideration from the age of 32 to 83. Here the impact of hypertension depending on the concomitant IHD in patients on the heart is analyzed with Echocardiography readings. All statistical analysis was done using STATISTICA 12 for Windows OS. Since the obtained data did not obey the law of normal distribution, they were presented in the format of median, Q1 (lower quartile) and Q2 (upper quartile) and Mann – Whitney test was used to evaluate differences between the two groups.

The results of the research and their discussion

Out of the total 50 patients, 84% are females and 16% males in group 1 and 60% females and 40% males in group 2.

Analyzing echo readings on the mitral valve of group 1 reveals that 48% of patients do not have any regurgitation, while 52% exhibit regurgitation, with 36% classified as 1st degree and 16% as 2nd degree. Same readings on group 2 reveals 24% do not have any regurgitation, while 76% exhibit regurgitation with 40% classified as 1st degree, 24% of 2nd degree, and 12% of 3rd degree.

Analyzing echo readings on the aortal valve of group 1 reveals that 72% of patients do not have any regurgitation, while 28% exhibit regurgitation, with 24% classified as 1st degree and 4% as 2nd degree. Same readings on group 2 reveals 64% do not have any regurgitation, while 36% exhibit regurgitation with 20% classified as 1st degree, 4% of 2nd degree, and 12% of 3rd degree.

Analyzing echo readings on the pulmonary valve of group 1 reveals that 16% of patients do not have any regurgitation, while 84% exhibit regurgitation, with all classified as 1st degree. Same readings on group 2 reveals 20% do not have any regurgitation, while 80% exhibit regurgitation with 72% classified as 1st degree, 8% of 2nd degree. Analyzing echo readings on the tricuspid valve of group 1 reveals that 36% of patients do not have any regurgitation, while 64% exhibit regurgitation, with 60% classified as 1st degree and 4% as 2nd degree. Same readings on group 2 reveals 8% do not have any regurgitation, while 92% exhibit regurgitation with 48% classified as 1st degree, 36% of 2nd degree, and 8% of 3rd degree.

As shown in Table 1, median values, Q25, Q75, and P values are compared for all echo readings, encompassing left ventricular mass, posterior wall thickness, IV septal thickness, ascending aorta, left atrial parameters, left ventricular parameters, end-diastolic volumes, and end-systolic volumes. In our research study focusing on patients with ischemic heart disease (IHD), we have observed a significant difference in left ventricular end-systolic and end-diastolic volumes between individuals with IHD and those with hypertension alone.

Our findings reveal that patients with IHD exhibit higher left ventricular end-systolic and end-diastolic volumes compared to individuals with hypertension alone, suggesting a greater degree of cardiac remodeling and dysfunction in the context of ischemic heart disease.

Echo reading of the left ventricular mass and wall thickness suggests the hypertrophy of the left ventricle and it is a common manifestation of hypertensive patients. The value been more higher in the second group suggests that IHD also has an impact on the hypertrophy of left ventricle. Likewise, the left atrium volume and left atrium anterior posterior size parameters of group 2 been significantly high than the group 1 suggests the higher impact of IHD and hypertension on a patient's heart. The comparison indicates that the impact of hypertension and IHD combined on the heart is significantly greater than that of hypertension alone.

Table 1 – P, Q25,Q75 values

Values	Group 1	Group 2	p-value
Left ventricular mass	135,7 [108,4–168,4]	175,8 [141,9–209,5]	0,0098*
Post wall thickness(D)	7 [7–9]	9 [7–10]	0,0237*
I/V septal thickness	8 [8–9]	10 [9–11]	0,0297*
Ascending section of aorta	30 [29–33]	38 [34–40]	0,0000
Left atrium ant post size	40 [35–43]	41 [37–44]	0,2563*
Left atrium volume	56 [44–62]	68 [59–83]	0,0094*
Left ventricle end diastolic size	49 [47–52]	53 [49–57]	0,0489*
Left ventricle end systolic size	29 [25–32]	31 [28–34]	0,1031*
Age	57 [48–62]	67 [65–73]	0,0000

Conclusions

These results underscore the importance of considering the unique cardiac structural changes that occur in patients with IHD, which may have implications for the management and treatment of these individuals to improve outcomes and quality of life. This suggests that the presence of both hypertension and IHD may have a synergistic effect on the heart, leading to more pronounced cardiovascular complications and potentially worsening cardiac function. It underscores the importance of managing both conditions effectively to reduce the risk of adverse outcomes and improve overall heart health.

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COMPREHENSIVE ANALYSIS OF THE RELATIONSHIP BETWEEN MODIFIABLE AND NON-MODIFIABLE RISK FACTORS AND THE DEVELOPMENT OF ARTERIAL HYPERTENSION

Introduction

Arterial hypertension is characterized by a persistent elevation of systolic blood pressure equal to or greater than 140mmHg and/or diastolic blood pressure equal to or greater than 90mmHg, as measured using Korotkov’s method on two or more consecutive visits with an interval of at least one week [1, 2]. With an estimated prevalence exceeding one billion people globally, hypertension has emerged as a leading cause of cardiovascular morbidity and mortality [3]. In Belarus, where the prevalence of hypertension is notably high, the burden of this condition contributes significantly to the country’s overall disease burden and healthcare costs [4]. Risk