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THE ROLE OF PREDICTORS IN THE FORMATION OF THROMBOSIS IN ATRIAL FIBRILLATION (REVIEW ARTICLE)

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ABSTRACT

Atrial fibrillation (AF) is one of the unfavorable diseases of cardiology, because five times increases the risk of thromboembolic complications (TEC). AF is associated with a number of complications, such as cardioembolic variant of ischemic stroke (IS), worsens the quality of life, reduces exercise tolerance and increases the risk of death rate. A significant contribution to the formation of the pathogenesis of cardiac arrhythmias is played by factors associated with remodeling of the heart chambers and intracardiac hemodynamics.

Key words: atrial fibrillation, arrhythmia, coronary heart disease, remodeling, predictors.

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РОЛЬ ПРЕДИКТОРОВ К ФОРМИРОВАНИЮ ТРОМБОЗА ПРИ ФИБРИЛЛЯЦИИ ПРЕДСЕРДИЙ (ОБЗОРНАЯ СТАТЬЯ)

АННОТАЦИЯ

Фибрилляция предсердий (ФП) одна из неблагоприятных болезней кардиологии, т.к. пятикратно увеличивает риск тромбоэмболических осложнений (ТЭО). ФП ассоциируется с рядом осложнений, например, кардиоэмболический вариант ишемического инсульта (ИИ), ухудшает качество жизни, снижает переносимость физических нагрузок и увеличивает риск смертности. Существенный вклад на формирование патогенеза нарушения ритма сердца играют факторы, связанные с ремоделированием камер сердца и внутрисердечной

гемодинамикой.

Ключевые слова: фибрилляция предсердий, аритмия, ишемическая болезнь сердца, ремоделирование, предикторы.

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BO`LMACHALAR FIBRILATSIYASIDA TROMBOZNING SHAKLLANISHI UCHUN BASHORAT QILUVCHI OMILLARNING ROLI (ADABIYOTLAR SHARHI)

ANNOTATSIYA

Bo`lmacha fibrilatsiyasi (BF) kardiologiyaning oqibati yomon kechuvchi kasalliklaridan biridir, chunki tromboembolik asoratlar xavfini besh baravar oshiradi. BF bir qator asoratlar bilan bog'liq, masalan, ishemik insultning kardioembolik varianti, hayot sifatini yomonlashtiradi, jismoniy mashqlar bardoshliligini pasaytiradi va o'lim xavfini oshiradi. Yurak aritmiyalarining patogenezini shakllantirishga yurak kameralari va intrakardiyal gemodinamikani qayta qurish bilan bog'liq bo'lgan omillar muhim hissa qo'shadi.

Kalit so'zlar: atriyal fibrilatsiya, aritmiya, yurak tomirlari kasalligi, remodeling, prediktorlar.

Atrial fibrillation is the outcome of most cardiovascular diseases, with excessively rapid atrial contractions [20, 21]. As a result, the efficiency of the pumping function of the heart decreases, which leads to impaired coordination of cardiac activity. The literature review reveals the clinical significance of determining the severity of the condition of patients with atrial fibrillation complicated by heart failure. According to the World Health Organization (WHO), AF affects approximately 33.5 million people worldwide, and this figure continues to rise.

The purpose of the study: To identify early clinical predictors in the formation of atrial fibrillation based on the latest research from scientific journals over the past 10 years.

Introduction. According to the WHO, AF affects about 33.5 million people worldwide, and this figure continues to rise. AF is a significant public health problem based on its high prevalence, complexity of diagnosis and treatment, and high medical costs and lost productivity. Despite improvements in diagnostic and therapeutic methods, AF remains a serious threat to the health and quality of life of patients. Thus, the statistics of Chatterjee S, et al. (2014) showed that LV mass is a factor in the onset of AF [3].

Zaigraev I.A. and a colleague (2019) used laboratory parameters to predict the presence of a thrombus in the left atrium (LA) and/or its appendage (aLA). Scientists have found a relationship between the presence of a thrombus in the LA / aLA of the blood group, peripheral blood parameters, blood levels of brain natriuretic peptide, homocysteine, asymmetric D-methylarginine, uric acid and D-dimer. On the part of the data obtained during transthoracic echocardiography, these are the mass index of the myocardium of the left ventricle, the volume index of the left atrium, the ratio of LVEF / left atrial volume index, the E / e' ratio, the peak systolic deformation of the left atrium [4].

Kornelyuk I.V. and a number of authors have established the effect of a combination of LA dilatation and a decrease in LV EF on the risk of LAA thrombosis. An increase in the anterior-posterior LA size of more than 42 mm with a decrease in LV EF less than 50% increases the risk of detecting a thrombus in the LAA in patients with persistent AF. Thus, to predict the development of thrombosis of the LAA, it is necessary to take into account the size of the LA and LV EF, and patients with a high risk of thrombosis of the LAA are recommended to have a mandatory transesophageal echocardiography (TEE) study. When the peak blood flow velocity (PVC) is lower than 0.341 m/s, a high risk of thrombosis of the LAA is determined, with a PVC greater than or equal to 0.341 m/s, the

normal risk of LAA thrombus is determined (sensitivity 77%, specificity 87%) [5].

Transesophageal echocardiography allows not only to identify the presence of a thrombus, but also to assess the features of blood flow in the LAA. In the study of Kornelyuk I.V. the influence of thrombus formation in the LAA was affected by the rate of its emptying, the decrease in PVC to 0.341 m/s, which can be assumed to increase the risk of thrombosis of the LAA. Research data of Kornelyuk I.V. coincides with the results of the SPAF III study, which proved the effect of PSK on the risk of thrombosis in the LAA: where in patients with AF, who had a blood ejection velocity from the LAA of less than 0.2 m/s, a thrombus in the LAA was more often depicted [6], and in the case of Kornelyuk I.V. this threshold turned out to be higher and amounted to 0.341 m/s. [5].

In his study Kornelyuk I.V. during TEE revealed another predictor for the formation of thrombosis in the LAA, this is a decrease in PVC less than 0.341 m/s.

Kharkova N.Yu. (2021) et al. studied patients living in the Far North. During the examination, it turned out that in the selected category of patients, the frequency of detection of LAA thrombosis is 2 times higher due to an increase in the size of the atria, the right ventricle and a low ejection fraction of the left ventricle (LV) [7].

Comparative evaluation of EchoCG data showed that patients with LAA thrombus had more pronounced structural and functional changes in the heart, namely, an increase in the mass index of the left ventricular myocardium and a persistent form of AF [7].

Hasnulin V.I. (2016), Shurkevich NP (2015) and a number of co-authors argue that in the North, in adverse climatic conditions, arterial hypertension is accompanied by the onset of metabolic syndrome, the elastic properties of the vessel wall worsen and kidney damage [8,9].

Described in the works of Hindricks G (EACTS, 2020) and Zaigrayev IA (2019) on the presented cardiovascular risk factors with the development of AF, is currently well studied, and according to research results, these factors, inducing AF, are involved in the pathogenesis of thrombosis in LAA [1,2].

Khorkova N. Yu. managed to identify 2 independent predictors of LAA thrombosis — left ventricular myocardial mass index (LVMI) and persistent AF [7], and irrespective of the region of residence - ischemic heart disease (IHD), persistent form of AF, LA diameter >43 mm and the presence of concentric or eccentric LV hypertrophy [7].

LV hypertrophy is a prognostically unfavorable risk factor for cardiovascular complications [7]. According to Shenasa M, et al. (2015), the cause of the development of LV hypertrophy is not only arterial hypertension (AH), but also obesity, metabolic syndrome, and environmental factors [10], and according to Hasnulin VI (2016), Shurkevich NP (2015), Zapesochnaya IL, et al. (2013) the climatic factor on the inhabitants of the Far North is accompanied by a more severe course of AH, gives rise to the process of early remodeling of the heart chambers, thereby contributing to damage to target organs, primarily the left ventricle [8,9,11].

According to Khorkova NYu (2020), LV hypertrophy, due to pressure overload, is accompanied by a gradual dilatation of the heart cavities, incl. LP, leading to an increase in intra-atrial pressure, a violation of the contractile function of the LA, the formation of atrial stunning with parietal blood stasis in them [7]. Boyd AC, et al. (2013) also found that an increase in LV MMI is one of the strongest predictors of LAA thrombosis in patients with persistent AF (the area under the ROC curve was 0.98 [12], which is consistent with the results of the study by Khorkova N. Yu., with an increase in LV IMM by 1 g/m², the likelihood of developing LAA thrombosis increases by 2.9% [7].

Brain natriuretic peptide (BNP) is a neurohormone secreted by cardiomyocytes, the intensity of which is directly dependent on the pressure in the heart cavities. Hong-ling Yang et al., in a systematic review and a 2-year prospective study, diagnosed LAA cardiomyocytes as the main source of BNP. [13, 14].

There have been similar reports that BNP is an independent predictor of LA/sLA thrombosis. For example, a Japanese retrospective study observed 559 patients with prolonged paroxysmal non-valvular AF who took anticoagulant therapy before cardioversion for 3 weeks, while using TEE revealed 15 patients with LAA thrombus and amounted to 2.7% [15]. BNP was higher with a

thrombus in the LAA. After multivariate analysis, BNP value was independently associated with LAA thrombosis. In a study by Ochiumi Y. et al. 204 patients with non-valvular AF, undergoing TEE before EIT, not taking anticoagulants were included. Scientists have noticed that a high concentration of BNP is a predictor of thrombosis [16]. In the conclusions, take into account the level of BNP as a predictor of the presence of a thrombus in the LA/aLA in non-valvular AF.

According to the 2016 update of the American Society of Echocardiography and the European Association for Cardiovascular Imaging and the 2013 European Society of Hypertension and European Society of Cardiology practice guidelines for the treatment of arterial hypertension, transthoracic echocardiography (TT echocardiography) is a routine method of imaging and assessing the structure and function of the heart, used in clinical practice [17, 18]. During the study period, in patients with AF progression, was found pronounced changes in the local contractility of the LV myocardium in the form of a significant increase in the number of akinesis zones and a decrease in the number of normokinesis zones as compared to those in patients in whom the evolution of the course of arrhythmia was not observed [19].

Conclusions.

1. Thus, the predictors of k were a decrease in ejection fraction of less than 50%, mitral regurgitation, diastolic ventricular dysfunction, increased blood pressure and blood viscosity, atrial dilatation, and atrial fibrillation itself.
2. There have been no screening studies on the incidence of LAA thrombosis in AF.

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БИМЕДИЦИНА ВА АМАЛИЁТ ЖУРНАЛИ

9 ЖИЛД, 2 СОН

ЖУРНАЛ БИМЕДИЦИНЫ И ПРАКТИКИ

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