Modern American Journal of Medical and Health Sciences
ISSN (E): 3067-803X
Volume 01, Issue 08, November, 2025
Website: usajournals.org

CHANGES IN THE CONDITION OF PATIENTS WITH IDIOPATHIC ATRIAL FIBRILLATION AND HYPERTENSION AFTER RESTORATION OF SINUS RHYTHM

Avha Sajid
avha210@gmail.com

Qobiljonova Shaxnoza Rustam qizi
Tashkent State Medical University, Tashkent, Uzbekistan
Shaxnoza0044@gmail.com

Abstract

Atrial fibrillation (AF) is one of the most pressing problems in cardiology, due to the widespread prevalence of this arrhythmia [5] and the severity of complications associated with it, among which the most unfavorable are the development of strokes [8,11] and heart failure [1, 6].

Despite the keen interest of scientists in this problem, a number of rather important issues still remain unresolved. Thus, the conducted studies indicate the presence of a close pathogenetic relationship between AF and inflammation [3, 5], but it remains unclear what causes an increase in inflammatory markers in patients with AF, and what is the nature of the cause-and-effect relationship behind this relationship. On the one hand, inflammation may be a direct cause of the development and "fixation" of AF, on the other hand, it cannot be ruled out that the increase in the activity of systemic inflammation is not the cause, but a consequence of AF associated with the effect of arrhythmia on the hemodynamic state. This issue seems important for further study, since some studies have shown that not only antiarrhythmic drugs, but also drugs that affect inflammation processes, such as glucocorticosteroids [9], statins and ACE inhibitors [3], can be effective in the treatment of AF.

There is also no doubt that there are common links in the pathogenesis of AF and heart failure. On the one hand, it has been shown that the presence of chronic

Modern American Journal of Medical and Health Sciences
ISSN (E): 3067-803X
Volume 01, Issue 08, November, 2025
Website: usajournals.org

heart failure (CHF) predisposes to the development of AF, on the other hand, AF, due to its hemodynamic significance, can contribute to the onset and progression of heart failure [1]. It is known that hemodynamic disorders in AF are associated, first of all, with the loss of the atrial phase of filling of the 6 ventricles, which can cause a significant decrease in cardiac output, especially in cases of initially impaired ventricular filling, that is, in patients with arterial hypertension, mitral stenosis, hypertrophic or restrictive cardiomyopathy [6]. Hemodynamic disturbances are also aggravated by a high ventricular rate, which can lead to dilation and severe systolic dysfunction of the ventricles of the heart [4]. However, the question of the hemodynamic significance of AF and its role in the development and progression of heart failure has not yet been definitively resolved. In particular, it remains unclear to what extent AF affects hemodynamics in patients without "gross" cardiac pathology.

Considering the undoubted scientific interest and practical significance of solving the above issues, it seems relevant to conduct a study devoted to studying the influence of atrial fibrillation on the state of hemodynamics and the activity of systemic inflammation.

The aim of the study was to study the effect of atrial fibrillation on hemodynamics and systemic inflammatory activity in patients with idiopathic arrhythmia (IFA) and hypertension.

Research Objectives

1. Compare the structural and functional state of the heart and the severity of signs of heart failure against the background of AF in patients with idiopathic arrhythmia and patients with hypertension.
2. To identify the features of cardiac remodeling characteristic of patients with permanent AF.
3. To study the frequency of occurrence and duration of atrial stunning after restoration of sinus rhythm in patients with IFP and hypertension.
4. To study the effect of restoration of atrial systolic function on cardiac remodeling, severity of heart failure, level of endotoxinemia and activity of systemic inflammation.

Modern American Journal of Medical and Health Sciences
ISSN (E): 3067-803X
Volume 01, Issue 08, November, 2025
Website: usajournals.org

5. To assess the influence of the etiology of AF and systolic function of the left ventricle on the severity of changes in the condition of patients after restoration of sinus rhythm.

Study Results

This study is the first to comprehensively examine intracardiac and systemic hemodynamics and systemic inflammatory activity in patients with AF and idiopathic arrhythmia and hypertension. This study also examines the dynamics of the structural and functional state of the atria immediately following successful cardioversion in patients with idiopathic arrhythmia and hypertension after restoration of sinus rhythm, depending on the functional state of the left ventricle during an AF paroxysm.

For the first time, it has been demonstrated that the negative impact of AF on hemodynamics can be observed even in patients without organic heart disease and is independent of the functional state of the ventricles. The term "atrial failure" has been proposed for the first time to explain the nature of hemodynamic disturbances associated with AF.

For the first time, it was demonstrated that the positive hemodynamic effect of restoring sinus rhythm is significantly higher in patients with existing left ventricular systolic dysfunction against the background of AF.

In patients with AF, compared to those with IFP, patients with hypertension have higher levels, lower exercise tolerance, lower left ventricular ejection fraction and early diastolic filling velocity, higher left atrial volume, and higher pulmonary artery pressure. Compared to those with persistent AF, patients with IFP and hypertension with permanent AF have larger atrial volumes and higher pulmonary artery pressure, despite the same functional state of the left ventricle.

After restoration of sinus rhythm, most patients with persistent AF experience atrial stunning, which lasts longer in patients with hypertension than in those with IAF. After restoration of atrial systolic function, patients with persistent AF experience increased exercise tolerance, decreased atrial volume and pulmonary artery pressure, and decreased blood levels of endotoxin and TNF-α.

Modern American Journal of Medical and Health Sciences
ISSN (E): 3067-803X
Volume 01, Issue 08, November, 2025
Website: usajournals.org

When choosing a treatment strategy for patients with persistent AF, it should be taken into account that AF has a negative impact on hemodynamics even in patients without organic heart disease and with adequate heart rate control. A strategy of restoring sinus rhythm is preferable for all patients, especially those with a left ventricular ejection fraction of less than 50%.

After effective restoration of sinus rhythm, the improvement of the clinical and functional state of patients should be assessed after the disappearance of atrial stanning.

Conclusions

In patients with hypertension, unlike those with ischemic atrial fibrillation, systolic and diastolic function of the left ventricle improves after restoration of sinus rhythm. Improvement in left ventricular function after restoration of sinus rhythm is most pronounced in patients with a initially reduced left ventricular ejection fraction. The course of ischemic CHF with permanent AF is characterized by earlier onset, more pronounced clinical manifestations, and significantly higher average daily, daily, and mean diastolic heart rates than in patients with CHF in sinus rhythm.

A marker of more severe CHF associated with permanent AF is the level of atrial natriuretic protein alpha, which reflects myocardial stress, primarily in the atria. Negative factors that contribute to the development of CHF associated with permanent AF include patient age, obesity, hypertension history, prestolic blood pressure, angina functional class, history of AF complications such as stroke or TIA, and fasting plasma glucose levels.

References

1. Agosloni P, Emdin M, Corrä U et al. Permanent atrial fibrillation affects exercise capacity in chronic heart failure patients. Eur Heart J. 2018;29(19):2367-2372.
2. Aksnes TA, Flaa A, Strand A, Kjeldsen SE Prevention of atrial fibrillation in hypertension. C hit Hypertens Rep. 2018; 10(3): 175-181.

Modern American Journal of Medical and Health Sciences
ISSN (E): 3067-803X
Volume 01, Issue 08, November, 2025
Website: usajournals.org

3. Burstein B, Nattel S (2018) Atrial structural remodeling as an antiarrhythmic target. J Cardiovasc Pharmacol 52 (1):4-10
4. Caldwell JC, Mamas MA, Neyses L, Garratt CJ. What are the thromboembolic risks of heart failure combined with chronic or paroxysmal AF? J Card Fail. 2019; 16(4):340-347.
5. Jug B, Sebcstjen M, Sabovic M et al. Atrial fibrillation is an independent determinant of increased NT-proBNP levels in outpatients with signs and symptoms of heart failure. Wien Klin Wochenschr. 2019; 121 (21 -22):700-706.
6. Kallcrgis EM, Manios EG, Kanoupakis EM, Mavrakis HE, Arfanakis DA, Maliaraki NE, Lalhourakis CE, Chlouverakis Gl, Vardas PE (2018) Extracellular matrix alterations in patients with paroxysmal and persistent atrial fibrillation: biochemical assessment of collagen type-I turnover. J Am Coll Cardiol 52 (3):211-215.