Abstract

Atrial fibrillation (AF) is the most common supraventricular arrhythmia, characterized by an irregular and extremely rapid atrial electrical activation that causes loss of atrial mechanical function and important hemodynamic consequences. AF classification is important in both the therapeutic approach and the prognosis. Several classifications based on the ECG patch, epicardial or endocavitary records have been performed over time, but no classification can take into account all the characteristics of AF and especially associated diseases, which may be both the cause and consequence of arrhythmia.

Aim: The aim of the study is to establish the current profile of the patient with atrial fibrillation in the new era of oral anticoagulant therapy and sinus rhythm restoration.

Material and Methods: The trial was conducted on patients with atrial fibrillation hospitalized between 01.10.2014-31.03.2015 at Institute of Cardiovascular Diseases “Prof. Dr. G. Georgescu“, Iași. Patients included in the study were analyzed according to age and sex, criteria for the clinical and paraclinic definition for atrial fibrillation.

Results: Atrial fibrillation is an extremely common cardiovascular pathology and is present in about one-third of patients admitted to our clinic. Cardiovascular diseases such as hypertension, ischemic coronary artery disease, and valvulopathy are common in patients with AF. Patients with AF are usually elderly patients with many associated diseases in whom sinus rhythm restoration treatment and anticoagulant therapy are difficult to establish. AF is one of the most common arrhythmias that complicates the evolution of acute myocardial infarction, association between dual antiplatelet therapy and anticoagulation treatment, increasing the risk of bleeding complications.
Conclusions: Atrial fibrillation is an extremely common cardiovascular pathology and is present in about one-third of patients admitted to our hospital. The data obtained revealed that this arrhythmia occurs in a small number of cases as the only pathology of the patient, usually associated with numerous comorbidities. Cardiovascular diseases such as hypertension, ischemic coronary artery disease, valvulopathy are common in our practice. Patient with AF is a patient who requires long-term anticoagulant therapy and in whom sinus rhythm recovery therapy is dependent on the precocity of presentation to the physician, as well as on the therapeutic resources of current medicine.

Introduction
Atrial fibrillation (AF) is the most common arrhythmia in clinical practice. Over the past two decades, AF has become one of the most important public health issues and an important cause of cost increases in the health insurance system in Western countries. Although the AF is not a life-threatening arrhythmia, it significantly impairs the quality of life through its anatomical and hemodynamic consequences. In addition, this arrhythmia is frequently symptomatic and has important socio-economic implications due to reduced work capacity, cognitive impairment, and repeated hospitalization [1, 2].

The prevalence of AF varies with age and sex. Arrhythmia is present in 0.12%-0.16% in subjects aged less than 49 years, 3.7%-4.2% in those aged 60-70 years, 10%-17% of those aged 80 years. In addition, AF is more common in males than in females, with a ratio of about 1.2:1. The male gender thus becomes an independent risk factor of the AF. Population studies did not report significant differences in arrhythmia depending on race, although some of them on small groups of patients seem to indicate that there is a 50% lower risk of developing AF in the black population than in the white population [3-5].

AF is the most common cardiac arrhythmia, the incidence of which continues to increase in most countries with the increase in life expectancy of the population. AF is a frequent complication of acute myocardial infarction (AMI) and studies to date have shown an increase in the rate of heart failure, stroke, and death in patients where the two conditions are present [6-8].

The most important predictor in the onset and persistence of AF is arrhythmia itself. In the initial stage, AF determines an electrophysiological, mechanical and structural atrial remodeling, modifying the effective refractory period, reducing atrial conduction and loss of contractile function. Electrical, mechanical and structural remodeling determines maintenance of AF and progression from paroxysmal to permanent. Studies have shown that early initiation of the recovery strategy for sinus rhythm is an important factor in maintaining it in the long run. By shortening the atrial refractory period, reducing the rate of conduction and stimulating structural remodeling, AF determines AF [9].

Almost any valve lesion, which produces significant stenosis or regurgitation, is associated with AF development. In patients with degenerative mitral regurgitation who are in sinus rhythm at the time of diagnosis, the incidence of AF is consistent, whether mitral regurgitation is due flail or mitral valve prolapse [10]. Valvular pathology, due to acute articular rheumatism, although rare in the developed coun-
tries, is associated with an increased prevalence of AF. The arrhythmia occurs most frequently when rheumatic mitral valve disease is associated with tricuspid regurgitation. AF occurs in 29% of patients with isolated mitral stenosis, 11% in those with mitral regurgitation and only 1% in those with aortic valve disease. In patients with mitral stenosis, it has been shown that left atrium dilation, reduction in driving speed and prolongation of the effective refractory period contribute to the onset and persistence of AF [11, 12].

The association between hypertension and AF is well established. A history of hypertension is associated with a 1.42-fold higher risk of AF. Although the risk is relatively low, 1.2-1.5, hypertension is considered one of the most important predictors in AF development, along with age and gender [13, 14].

**Aim**

The aim of the study is to establish the current profile of the patient with atrial fibrillation in the new era of oral anticoagulant therapy and sinus rhythm restoration.

**Material and Methods**

We performed a retrospective observational study in which we analyzed the clinical and paraclinical data of all patients diagnosed with atrial fibrillation, admitted and investigated at the "Prof. Dr. G. Georgescu" Institute of Cardiovascular Diseases, Iasi. The inclusion criteria were AF patients hospitalized in our clinic from October 1st, 2014 to March 31st, 2015 and patients admitted to the Cardiology Clinic during that period for other cardiovascular conditions that developed AF.

The exclusion criteria were: 1) patients with congenital heart disease; 2) patients with a history of permanent pacemaker; 3) patients with valvular prostheses (mechanical or biological).

The study was conducted in accordance with the principles stipulated in the Declaration of Helsinki.
measured by 2D using standard techniques. Left ventricular ejection fraction (LVEF) was assessed semi-quantitatively by 2-D visual estimation or Simpson method and expressed in percent. Valvular regurgitation was assessed semi-quantitatively by 2-D colour Doppler visual estimation and scored from 0 through 5: 0 = no regurgitation, 1 = mild, 2 = mild-moderate, 3 = moderate, 4 = severe. Grades 2–4 were considered significant. Aortic stenosis (AS) was evaluated quantitatively and scored as follows: 0 = no stenosis (calculated peak transaortic valve pressure gradient < 20 mm Hg), 1 = mild (pressure gradient 20–30 mm Hg), 2 = moderate (pressure gradient 31–40 mm Hg), 3 = severe (pressure gradient > 40 mm Hg). Grades 2-3 were considered significant.

The data was uploaded and processed using statistical features in SPSS 18.0. The ANOVA test consisted in analyzing the dispersion of the dependent variable: intro and intergroup. The coefficient of variation (CV%) highlights the percentage deviation between two averages, giving results on the homogeneity of the value series.

Results
The analysis of the batch of patients admitted to the our Cardiology Clinic objected to 170 patients with paroxysmal AF and 271 patients with non-paroxysmal AF. Of these, compared to the two groups, there is a higher frequency of non-paroxysmal AF in men and women, with a higher prevalence of arrhythmia in rural areas of 53.5%. Regarding smoker status, it was identified in 6.5% of those evaluating, most subjects denying tobacco use. The assessment of weight status revealed 36.4% of obese patients, 37.4% of overweight patients and 27.2% of normal weight patients.

The evaluation of cardiovascular risk factors in our patients with AF showed the presence of HTA in 61.5% of the evaluated group, 21.3% of the patients were diabetic, dyslipidemia was present in 14.5% of the those evaluated, ischemic coronary artery disease at 30.4% and significant valvulopathies at 16.6% (Table 1).

Table 1. The cardiovascular risk factors at admission.

<table>
<thead>
<tr>
<th>Cardiovascular risk factors</th>
<th>Patients with permanent/ nonpermanent AF</th>
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<td>Count</td>
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<td>HTA</td>
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<tr>
<td>A</td>
<td>170</td>
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<td>A</td>
<td>347</td>
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<td>P</td>
<td>94</td>
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<tr>
<td>Dyslipidemia</td>
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<tr>
<td>A</td>
<td>377</td>
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<td>P</td>
<td>64</td>
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<tr>
<td>Coronary heart disease(AMI, PA, CABG)</td>
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<tr>
<td>A</td>
<td>307</td>
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<td>P</td>
<td>134</td>
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<tr>
<td>Valvular diseases</td>
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<tr>
<td>A</td>
<td>368</td>
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<td>P</td>
<td>73</td>
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<tr>
<td>Obesity</td>
<td></td>
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<tr>
<td>A</td>
<td>394</td>
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Of the comorbidities, we hold the presence of pulmonary pathology in 8.6% of patients, thyroid pathology at 9.3% (hyperthyroidism at 3.6%, hypothyroidism 5.7%), chronic renal disease at 7.5%, stroke 12.9%, the gastric or duodenal ulcer at 3.6%, neoplasia at 1.4%.

From the point of view of antithrombotic therapy at the time of presentation: 25.9% of patients were treated with aspirin, 20.9% had clopidogrel, double platelet aggregation was present at 38.4%, while oral anticoagulation was at 46.90%.

The paraclinical data evaluated were: ESR, fibrinogen, the count blood cell, CRP, total cholesterol, HDL-col, LDL-col, triglycerides, AST, ALT, GGT, LDH, CKMB, blood sugar, creatinine, urea, electrolytes, HbA1C, TSH, INR value and ECG (Table 2).
Non-invasive imaging methods were: transthoracic and transesophageal echocardiography by which the following parameters were evaluated: cavity/wall size, systolic and diastolic LV function, valvular morpho-functional characteristics, IVC diameter, pericardial appearance, abdominal echography, thoracic radiography.

Biological data analysis revealed: 85.1% of patients had a CHADSVASC score of >2 while 44.8% had a HAS-BLED score >3. A 13.9% of patients had anemia at the time of admission, 63.7% of those evaluated had a sub therapeutic INR, dyslipidemia was present at 42.17% of patients.

Clearance of creatinine evaluated according to the MDRD formula showed the presence of the renal impairment in most patients with an increased CrCl prevalence of 60-90 ml/min/1.73 m². Only 3.4% of the evaluated patients had severe renal impairment with CrCl < 30 ml/min/1.73 m² (Table 2).

Analysis of the imaging data revealed the presence of left ventricular hypertrophy at 65.75%, biatrial dilatation in over 30% of patients, pulmonary hypertension in over half of those enrolled in the study and a moderate to severe LVEF diminished in over 40% of the subjects evaluated (Table 3).
The assessment of treatment during hospitalization determined the use of statin in 44.8% of patients, 7.5% of fibrates were used, beta blockers were administered at 45.1%, amiodarone at 35.4%, propafenone at 7.9%, digoxin to 15.5%, enzyme conversion inhibitors to 72.7%, ARBs to 13.5% and dihydropyridine calcium blocker to 19.3% of those evaluated.

Antithrombotic treatment was performed with unfractionated heparin at 15.7%, low molecular weight heparin in 48.4% patients, 65% of those evaluating received anti-platelet antiaggregant treatment, oral anticoagulation was present in 48.75% of patients.

Of the procedures for the recovery of sinus rhythm, the presence of electrical cardioversion (SEE) was found in 16.6% of the patients, the procedure of pulmonary vein isolation (ARF) was performed in 5.7% of those evaluated, some of these patients receiving pre or postprocedural antiarrhythmic treatment (AT) (amiodarone/propafenone) (Figure 1).

The cardiac frequency control in the patients with chronic AF has been performed with BB at 81%, digoxin at 4%, beta blockers and digoxin at 13%, and calcium blockers in 2% of those evaluated (Figure 2).

Given the structural and functional remodeling that accompanies AF, treatment of the substrate was achieved with ACE-inhibitors in 27.3% of subjects, ARBs in 13.5% and with the ARM in 7%.

The assessment of the indication of oral anticoagulant treatment and the assessment of the hemorrhagic risk using the score risk evaluation highlighted the fact that in the studied group predominates the patients who have an indication of long-term anticoagulant treatment, most often associating with an increased risk of bleeding events (Figure 3).

**Discussions**

The epidemiological characteristics of the group of patients with atrial fibrillation were: the average age of the group was 69 years, with an increased incidence in AF in the male group, 43.8% were women and 56.2% men. Data published so far have
shown that from epidemiological factors, age and gender are the most important determinants of AF development [15].

Chugh et al. showed in a study made in 2010 named Worldwide Epidemiology of Atrial Fibrillation: A Global Burden of Disease 2010 Study that AF is a very common arrhythmia in clinical practice, with a significant socio-economic impact and two major complications that significantly reduce the patient’s quality of life stroke and heart failure [16].

Of 441 patients, 61.5% had non-paroxysmal AF while 38.5% paroxysmal AF. The data obtained are similar to those in the literature, AF is usually associated with other cardiac pathology and not only, creating the conditions for the occurrence of arrhythmia generating circuits that are usually situated in the pulmonary veins [17].

Of the cardiovascular diseases most commonly associated with AF is hypertension as shown in our study, of the 441 patients 61.5% had associated hypertension, the results obtained being similar to those presented in the literature [16].

The anticoagulant treatment is necessary for most patients with AF for prophylaxis of cardiovascular events. In the group studied CHADSVASC score was more than 2 in 85.1% of patients but only 48.75% of them received oral anticoagulation treatment.

The current guideline for atrial fibrillation treatment recommends anticoagulant therapy for all the patients with a CHADSVASC score more than 2, using either warfarin / acenocoumarol or new oral anticoagulant agents. The existing data show that only some of those who need anticoagulant treatment are given the correct pattern, one of the main causes being the physician's fear of bleeding events but also some incomplete assessment of the patient and his low adherence to the treatment regimen [18, 19].

The treatment of sinus rhythm restoration was carried out using in most cases pharmaceutical and/or electrical cardioversion, while ablation AF technique was practiced to 5.7% of the subjects.

Sinus rhythm recovery therapy is indicated and recommended whenever possible, at least once in the patient with atrial fibrillation [2]. The cornerstone of this therapy is currently the pulmonary veins isolation procedure [2]. Although this technique is not completely risk-free the success rate is quite high with few complications, the necessary conditions being the existence of a well-trained medical team and the rigorous selection of cases. These two conditions are difficult to fulfill because the curve of learning the technique itself requires a long time, the procedure is costly and difficult to implement in the development country.

Conclusions

Atrial fibrillation is an extremely common cardiovascular pathology and is present in about one-third of patients admitted to our clinic. AF is an arrhythmia that occurs more often in rural patients, usually, these patients are not properly evaluated due to reduced access to health care services.

Cardiovascular diseases such as hypertension, ischemic coronary artery disease, valvulopathy are common in patients with AF. Pulmonary and endocrine pathology is common in both arrhythmia and complication of antiarrhythmic therapy.

The data obtained revealed that the arrhythmic patient hospitalized in our medical service, is a complex, fragile patient, usually, men, with hypertension, elderly, treat with beta-blocker who usually requires antithrombotic therapy in the long run.

Sinus rhythm restoration treatment is based on antiarrhythmic treatment and electrical cardioversion procedure, pulmonary vein isolation being practiced in a small number of patients not because of the reduced accessibility of the procedure itself but also due to the structural and functional particularities of the arrhythmic patient.
References


