



Clinical Case Reports

Epidemiological Aspect of Atrial Fibrillation Seen in Three Cardiology Departments in Madagascar

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Abstract:

Introduction: Atrial fibrillation is the most common rhythm disorder. The main objective of this study is to describe the epidemiological and clinical aspect of atrial fibrillation in three cardiology departments in Antananarivo.

Method: Multicenter cross-sectional study carried out in the Cardiology Unit, the Intensive Care Unit of Cardiology of the Joseph Raseta Befelatanana University Hospital Center and in the Internal Medicine and Cardiovascular Diseases Service of the Soavinandriana Hospital Center from January 1, 2020 to November 30, 2020.

Results: Out of 1637 patients, 106 presented with atrial fibrillation, ie a prevalence of 6.47% with a mean age of 56 years. Permanent atrial fibrillation was the most common type (38.69%). The main risk factor associated with the development of atrial fibrillation was high blood pressure (51.00%). Among all patients: 66.98% had dilated left atrium and 21.11% had mitral stenosis. The main complication was heart failure (63.21%).

Conclusion: The epidemiological-clinical profile is dominated by the young age of our population; which is explained by the high prevalence of rheumatic valve disease in Madagascar as in other African countries.

Keywords: Epidemiology; Atrial fibrillation; Madagascar

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Introduction:

Atrial fibrillation (AF) is the most common arrhythmia with a global prevalence ranging from 2% to 4% [1]. It is serious because of its thromboembolic and hemodynamic complications, which make it a public health problem worldwide [2,3].

Several studies have provided a better understanding of this pathology in its entirety [4]. And regarding Madagascar, the last study on atrial fibrillation dates back to 2013 [5].

The main objective of this study was to describe the epidemiological-clinical aspect of atrial fibrillation within the cardiology departments and Cardiological Intensive Care Unit (CICU) of the Joseph Raseta Befelatanana University Hospital Center and the department of internal medicine and cardiovascular diseases of the Soavinandriana Hospital Center (CENHOSOA).

Méthode:

This is a multicenter cross-sectional study carried out in Antananarivo (Madagascar) from January 1,

2020 to November 30, 2020 in the cardiology department, the Cardiological Intensive Care Unit of the Joseph Raseta Befelatanana University Hospital Center (CHUJRB) and the Department of internal medicine and cardiovascular diseases at the Soavinandriana Hospital Center (CENHOSOA).

All patients who had atrial fibrillation confirmed by electrocardiogram (ECG) or Holter ECG admitted to hospital were included in the study.

The parameters studied were: age, gender, risk factors associated with AF, rhythmic and conductive abnormalities on the ECG, ultrasound data (the existence of dilation of the atria, left ventricular hypertrophy and of mitral stenosis as well as left ventricular ejection fraction in biplane Simpson mode), the two main complications (heart failure and ischemic stroke).

The EHRA (European Heart Rhythm Association) score was used to assess the impact of AF on the daily life of our study population [6].

The data was obtained from the analysis of medical files and collected from a questionnaire then recorded on an Excel database and analyzed by STAT® 13 software.

For the result, continuous variables were expressed as average and categorical variables as percentage.

Results:

In our study, 106 patients out of 1637 hospitalized in these three departments during the study period presented atrial fibrillation, i.e. a prevalence of 6.47%. The clinical and paraclinical characteristics are summarized in Table 1.

The average age of our population was 56 years with a fairly equitably distribution between male and female genders (sex ratio of 1.03).

Arterial hypertension (51.00%) was the main risk factor. The majority of patients had an EHRA score I (40.56%) and II (45.28%). Permanent atrial fibrillation was predominant (38.68%). Rhythm disorders other than atrial fibrillation were quite common on the ECG (36.62%). Among the cases studied: 66.98% showed dilation of the left atrium,

27.90% left ventricular hypertrophy. Nearly half of the cases (50.10%) had preserved ventricular ejection fraction. Mitral stenosis was diagnosed in 21.11% of patients. The most frequent complication was heart failure (63.21%).

Table 1 : Clinical and paraclinical characteristics

General characteristics	
Sex-ratio	1,03
Mean age (year)	56,9 ± 14,8
Mean heart rate (bpm)	90,1 ± 22,3
Atrial fibrillation type	
Paroxysmal (%)	14,15
Persistent (%)	33,62
Long-term persistent (%)	14,15
Permanent (%)	38,68
Risk factors	
Arterial hypertension (%)	51,00
Diabete (%)	16,00
Stimulants (%)	15,66
Smoking (%)	11,00
Obstructive sleep apnea (%)	1,20
EHRA score	
I (%)	40,56
II (%)	45,28
III (%)	12,26
IV (%)	1,88
ECG abnormalities	
Rhythm disorders other than AF (%)	39,62
Conduction disorders (%)	33,01
Echocardiographical abnormalities	
Left atrium dilation (%)	66,98
Left ventricle hypertrophy (%)	27,36
Mitral stenosis (%)	21,11
LVEF	
Preserved (%)	50,01
Intermediate (%)	18,86
Reduced (%)	31,13
Complications	
Stroke (%)	63,21
Heart failure (%)	17,92

Discussion :

The high prevalence of rheumatic valve disease in African countries such as Madagascar compared to American and European countries could explain the youth of our study population [7]. Moreover, this also explains the significant prevalence of mitral stenosis in our result.

Hypertension leads to left ventricular remodeling and dilation of the left atrium responsible for the genesis of AF [8,9]. This explains its predominance in our study population and in the literature [10,11].

Regarding complications of AF, the predominance of heart failure compared to ischemic stroke is related to the delay in screening for AF, whereby patients only present at the stage of cardiac decompensation.

As for the lower report of stroke in our study, this may be due to the absence of exploration in patients presenting with ischemic stroke due to lack of technical means at hospital or for financial reasons limiting the performance of long-term holter monitoring or further investigation to detect AF, which is the cause in the majority of cases. This also could explain the low prevalence of paroxysmal AF in our study.

Dilatation of the left atrium linked to atrial structural changes plays an important role in the genesis and perpetuation of AF [12].

Also note the significant frequency of left ventricular hypertrophy in our study and in some literature report which may highlight its role in the genesis of AF [13,14]. Indeed, according to the Framingham study [15], it increases the risk of developing AF by 3 to 3.8.

Conclusion:

The epidemiological-clinical profile resulting from our multicenter study made it possible to confirm the results of the various studies carried out in Madagascar and in other African countries with a young average age compared to developed countries such as Europe, which is due to a still high prevalence of rheumatic valve disease.

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