

Research Article

Epidemioclinical Profiles, Treatment and Outcomes of Atrial Fibrillation in The Black African Peoples: Case of Togo

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- Atrial Fibrillation
- Epidemioclinical Aspects
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Abstract

Background and Objective: Atrial fibrillation is the most common cardiac arrhythmia in adults. This study intends to describe the epidemioclinical, therapeutic and evolutionary aspects of atrial fibrillation in the cardiology department of Kara University Hospital.

Materials and Methods: This was a descriptive study with retrospective data collection conducted in the cardiology department of Kara University Hospital from January 1, 2021 to December 31, 2023. The study sample (89 files) consisted of all records of patients treated for atrial fibrillation in the department during the study period.

Results: The hospital prevalence of atrial fibrillation was 10.9%. The patients mean age was 65.1 years, with parity between the sexes (sex ratio 0.98). The high blood pressure was the most frequent risk factor in 52.6% of patients. Dyspnea was the main reason for consultation in 68% of cases. The left ventricular hypertrophy was the most common ECG abnormality in 20.6% of cases. Echocardiographic abnormalities were dominated by dilatation of the left atrium (69.1%). Aetiological factors were dominated by hypertensive heart disease, which was found in 47.3% of cases. Treatment was essentially based on the use of anticoagulants and antiarrhythmics (beta blockers and digoxin) to control heart rate. The course was marked by the occurrence of complications (heart failure in 45.4% and thromboembolic complications in 13.4%) and death in 6.2%.

Conclusion: The hospital wide extension of atrial fibrillation was 10.9% in our department. Hypertensive heart disease was the most frequent aetiological factor, and complications were dominated by heart failure and thromboembolic complications. Prevention is therefore important and involves management of the aetiological factors, in particular hypertension

INTRODUCTION

Atrial fibrillation (AF) is a cardiac arrhythmia caused by rapid (400-600/min), anarchic electrical activity of the atria, with the loss of hemodynamic efficiency [1]. It is the most common rhythm disorder in adults, affecting over 43.6 million people worldwide [1,2]. In France, almost 230,000 new cases are diagnosed each year [3]. Atrial fibrillation is very common in patients with heart failure, and in some studies carried out in Western countries, the incidence is close to 50% [4]. In sub-Saharan Africa, the hospital incidence of AF varies from study to study: 5.35%

[5], in Dakar, Senegal, 13.06% in Côte d'Ivoire [6], and 12.9% in Togo [7]. In a nutshell, the prevalence of AF is set to double over the next few decades, due to the ageing of the population, the increasing frequency of co-morbidities and etiological factors such as high blood pressure, and the development of new diagnostic techniques used mainly in Western countries [8].

The management of atrial fibrillation remains a major public health issue, on account of its complications such as heart failure and, above all, thromboembolic complications, which sometimes leave disabling after-effects. The cost of

treatment is high, estimated at around €2.5 billion a year in France [9]. In Western countries, patients benefit from optimal management, with the availability of techniques for ablation and closure of the left atrium [10,11]; unlike in our developing countries, where management is limited to the use of antiarrhythmics and anticoagulants. In Togo, and more specifically in the northern part of the country, there are no data on the extent and management of AF. The aim of this study, which we carried out at Kara University Teaching Hospital, the referral center for the northern part of Togo, was to describe the epidemioclinical and therapeutic aspects, and to identify the various complications of atrial fibrillation.

MATERIALS AND METHODS

Our study was carried out in the cardiology department of Kara University Hospital Center. This is the referral hospital for the northern region of the country, and has a cardiology ward with the human and material resources required for the diagnosis and management of cardiovascular diseases. This was a retrospective descriptive study of inpatient and outpatient records from January 1, 2021 to December 31, 2023, a total three years duration.

The study included all patients aged 18 and over, received in the department during the study period and diagnosed with atrial fibrillation on the basis of a surface electrocardiogram (ECG). Other supraventricular rhythm disorders, namely atrial flutter and atrial tachycardia, were not included in our study.

To carry out this study, we first drafted a research protocol and drew up a survey form. We then filled in the survey form on the basis of patient files and registers available in the department. The settings we considered in our research were: age, sex, educational level, clinical data (comorbidities and/or cardiovascular risk factors, functional signs, weight, blood pressure); paraclinical data (electrocardiographic, echographic and biological [kalemia and thyroid hormones]), therapeutic, evolutionary and prognostic data (complications). Concerning operational definitions:

The ESH/ESC 2018 recommendations [12], defined arterial hypertension (AH) as a blood pressure (BP) greater than or equal to 140/90 mmHg.

Body mass index (BMI) was determined on the basis of weight and height, and obesity was defined as BMI greater than or equal to 30 kg/m², while overweight was defined as BMI between 25 and 30 kg/m².

The diagnosis of pulmonary embolism was made on

the basis of clinical, electrical and ultrasound findings, and above all on the basis of CT scans, which confirmed the diagnosis by showing the thrombus in the lumen of the pulmonary artery or in one of its branches.

Ischemic heart disease is defined on the basis of clinical, electrical and echocardiographic criteria, and includes acute and chronic coronary syndromes. No patient underwent coronary angiography or ischemia testing.

The term “organic valvulopathy” refers to narrowing and/or insufficiency of the aortic and mitral valves due to organic causes (rheumatic or degenerative).

According to the ESC 2020 guidelines, AF is classified as paroxysmal, persistent or permanent [13].

Data were recorded and analyzed using Sphinx plus² Version 5.0.0.82 software. Quantitative variables were expressed as averages and qualitative variables as percentages. Excel 2016 was used to produce the graphs, while Microsoft Word 2016 was used to draft the document.

RESULTS

During our study period, 890 patients were followed up in the cardiology department. Of these, 97 patients, including 48 men (sex ratio = 0.98), had presented with atrial fibrillation (AF), representing a prevalence of 10.9%. The mean age of patients with AF was 65.1 years, compared with 54.1 years for patients without AF ($p = 0.001$). Sixty-nine point one percent of patients with AF were aged 60 or over. The various clinical aspects of the patients are shown in Table 1. Paraclinical parameters (electrical, echographic and biological) are summarized in Table 2. In terms of etiology or favouring factors, AF occurred in a healthy heart in 4.1% of cases (4 patients) and was valvular in 13.4% (13 patients). Table 3 summarizes the etiologies and/or favouring factors of AF in our study. The CHA₂DS₂-VASc score was ≥ 1 in 91 patients (93.8%) and ≥ 2 in 58 patients (60%).

Therapeutically, external electric shock was used in 3 patients (3.1% of cases). Amiodarone was used in 13 patients, including 2 by injection for emergency rhythm control. Digoxin and beta-blockers were the drugs used for heart rate control in 43.3% and 39.2% of cases respectively. With regard to anticoagulants, unfractionated heparin was used in 67.1% of cases (65 patients) and low-molecular-weight heparin (enoxaparin) in 28.9%. Oral anticoagulants (rivaroxaban only) were used in 64 patients (66% of cases), versus 33 patients (34% of cases) for K-vitamins. In terms of evolution, we noted a return to sinus rhythm

Table 1: Various clinical aspects of the study population

	Number	%
Educational Level (95 cases)		
Primary	23	24.2
Secondary	24	25.3
Higher	14	14.7
Uneducated	35	36.8
Comorbidities/backgrounds (97 cases)		
High blood pressure	51	52.6
Chronic alcoholism	32	33
Heart failure	11	11.3
Diabetes	7	7.2
Dyslipidaemia	6	6.2
Asthma	5	5.2
Active and / or passive smoking	5	5.2
Functional signs or reason (97 cases)		
Dyspnea	66	68
Asthenia	41	42.3
cough	34	35.1
Chest pain	24	24.7
Palpitations	21	21.6
Lipothymia/syncope	7	7.2
BMI (86 reported cases)		
Normal	44	51.2
Overweight	24	27.9
Obesity	18	20.9
Blood pressure on admission (97 cases)		
Optimal	17	17.5
Normal	20	20.6
Normal high	15	15.5
HBP grade 1	18	18.6
HBP grade 2	14	14.4
HBP grade 3	13	13.4
Left heart failure	30	30.9
Right heart failure	29	29.9
Global heart failure	25	25.8

N = number; % = percentage; BMI = body mass index; HBP = High blood pressure

Table 2: Paraclinical data (electrical, echocardiographic and biological)

	Number	%
Electrocardiographical data (97 cases)		
Left ventricular hypertrophy	20	20.6
Ventricular extra systoles	9	9.3
Conduction disorder	15	15.5
Ischemic – like repolarization abnormalities	4	4.1
Echocardiographic data (97 cases)		
Left ventricular dilatation	19	19.6
Left ventricular hypertrophy (IVS et PW $\geq$ 12 mm)	22	22.7
Left ventricular Systolic dysfunction (LVEF < 50%)	31	32
Elevated left ventricular filling pressures	14	14.4
Abnormalities of left ventricular segmental kinetics	8	8.2
Right ventricular dilatation	12	12.4
Right ventricular dysfunction (TAPSE < 17 mm)	3	3.1
Dilated left atrium	67	69.1
Dilated right atrium	13	13.4
Organic valvulopathies	13	13.4
Secondary mitral regurgitation (Functional)	8	8.2
PHBP	33	34
Pericardial effusion	5	5.2
Presence of intracardiac thrombus	9	9.3
Biological data		
Dysthyroidism (71 patients)	5	7.1
Hypokalaemia (76 patients)	10	11.5

N = number; % = percentage; LV = left ventricular; IVS = interventricular septum; PW = posterior wall; LVEF = left ventricular ejection fraction; PHBP = pulmonary high blood pressure.

Table 3: Various causes or contributing factors of AF

	Number	%
Hypertensive heart Disease	46	47.4
Organic Valvulopathies	13	13.4
Dilated Cardiomyopathy (DCM)	12	12.4
Ischemic heart disease	11	11.3
Pulmonary heart (acute and chronic)	8	8.2
Acute pericarditis	3	3.1
Dysthyroidism	2	2.1
Not identified cause	2	2.1

in 15 patients (15.5%), including 3 cases of electrical cardioversion, and 84.5% of persistent AF (82 patients). The main complications were: heart failure in 45.4% of cases; thromboembolic complications in 13.4% of cases, including 4.1% (4 cases) of ischemic stroke and one case of acute limb ischemia. A total of 6 patients died during hospitalization, representing a mortality rate of 6.2%.

DISCUSSION

We carried out a descriptive study of the epidemioclinical, paraclinical and therapeutic aspects and complications of atrial fibrillation, the most common rhythm disorder in adults. Atrial fibrillation represents a public health problem worldwide, owing to its prevalence, which is set to double over the coming decades, and above all to its socio-economic impact on the population. Like all retrospective studies, our study has a number of shortcomings, notably selection bias. Nevertheless, our results merit special attention, as this is a landmark study whose findings will enable us to take steps to improve the management of this pathology in our environment.

The hospital frequency of AF in our study was 10.9%, with a mean patient age of 65 years and parity between men and women (51.5% female). Considering studies carried out in the sub-region, our frequency is slightly higher than that reported by Sangaré et al. [14], in Mali in 2017 and by Diop Khadimu et al. [15], in Senegal, who found 6.7% and 6% hospital prevalence respectively. With regard to the age of AF patients, the literature clearly shows an increase in prevalence with age. Thus, our results are similar to those of Sangaré et al., and Yameogo et al. [16], in 2012 in Senegal, who reported a mean age of 61 and 67 years respectively in their series. Because of the higher life expectancy in Western countries, the mean age of patients is much higher in studies of patients with atrial fibrillation, as evidenced by the mean age of 75 years reported by Da Costa et al. [17], in France.

In our study, arterial hypertension was the most frequent cardiovascular risk factor, found in 52.6% of cases. Our results are comparable to those of Yassine et al., in Morocco [18] and Triki et al. [19], in Tunisia, who reported a 55% and 52% prevalence of hypertension respectively.

These data confirm the importance of hypertension as an etiological factor in most cardiovascular pathologies, including atrial fibrillation. We recorded only 13% of valvular AF in our study, which is significantly lower than the frequency of valvular heart disease in Africa: 36.7% of valvular AF in the study by Mbaye et al. [5], in Senegal in 2010 and 36% in the series by Triki et al. [19], in Tunisia. Apart from selection bias and sample size, which could explain the low frequency of valvular AF in our study, we can also point to the ever-increasing proportion of ischemic heart disease taking precedence over valvular heart disease in African countries.

In patients suffering from AF, ultrasound evaluation is essential to look for dilatation of the heart chambers, especially atrial, and ventricular systolic dysfunction, which are decisive factors in making therapeutic decisions. In our study, left atrial dilatation and left ventricular systolic dysfunction were found in 72% and 33% of cases respectively. These two parameters are found in very high proportions in most AF studies carried out in the sub-region. In Mali, Traoré et al. [20], reported 65% left atrial dilatation and 59% left ventricular dysfunction in their series of AF patients.

The biggest concern for AF patients is the occurrence of thromboembolic complications, the prevention of which requires the use of anticoagulants. Prescription of anticoagulant therapy is guided by the CHA2DS2 VSc score, which predicts thrombotic risk in patients. In our study, this score was greater or equal to 2 in 60% of cases, whereas Dzudie et al. [21], in Cameroon and Triki et al. [19], in Tunisia reported scores of 88% and 76% respectively. These high rates of this score demonstrate the high level of thrombotic risk in AF patients, necessitating systematic anticoagulation to avoid complications that can be fatal for the patient. In our study, all patients were on oral anticoagulants prior to hospital discharge: 34% were on antivitamin K and 66% on direct oral anticoagulants (DAC). In Cameroon, the only oral anticoagulant used was Rivaroxaban in only 22% of patients [21]. The low rate of DAC use compared with Western countries is partly due to supply difficulties, and it is only rivaroxaban that is the most widely available in the sub-region. The second reason for the under-utilization of DACs is their high cost. Rivaroxaban, the only molecule marketed in our country (Togo), is not covered by the national health insurance scheme, and the price of this drug is beyond the reach of the population. This situation condemns patients to the use of anti-vitamin K, whose monitoring is more restrictive due to the often unstable INR (international normalized ratio) biological controls.

Non-drug treatment is an important part of AF management. These include external electric shock (very little used in our department) and radiofrequency ablation, which is only used in countries with a high level of technical resources. The low rate of use of electric shock in our study (3.1%) is explained by the absence of the emergency cart that must be in place before any intervention. As a result, this therapeutic technique (electric shock) is only used in emergencies. The same situation prevails in many countries of the sub-region: 0% of external electric shocks in Mali reported by Sangaré et al. [14], and 1.3% in Senegal [5].

In terms of evolution, the return's percentage to sinus rhythm remained low in our study (15.5%). This low rate of rhythm control in AF is observed in most studies carried out in sub-Saharan Africa: Coulibaly et al., in Mali [22], found in their research a higher rate of rhythm recovery at 27%. The low rate of electrical cardioversion largely explains the difficulties in restoring sinus rhythm in our study. In AF patients, the course is often marked by hemodynamic complications, notably heart failure, and thromboembolic complications such as ischemic stroke and acute limb ischemia. These complications are very common in developing countries, as shown by the AFRICA registry carried out in Senegal, where hemodynamic and thromboembolic complications accounted for 66% and 28% respectively. In our study, these complications were less frequent: 45% heart failure and 13% thromboembolic complications. This low complication rate in our study could be related to the sampling or to the selection criteria. In short, AF remains a serious pathology because of its hemodynamic and/or thromboembolic complications, which can lead to the patient's death. Kane et al. [23], in Senegal report a mortality rate (4.7%) almost similar to our own (6.1%), while Coulibaly et al. [22], in Mali report a much higher mortality rate of 15%.

CONCLUSION

The hospital frequency of atrial fibrillation is 10.9% in our department. It affects elderly subjects with an average age of 65.1 years and parity between the sexes (sex ratio = 0.98). Hypertensive heart disease is the main etiological factor. Management is essentially medicinal, with antiarrhythmics and anticoagulants. Complications are dominated by heart failure and thromboembolic complications. Therefore, the prevention is an important factor in the management of etiological factors, notably high blood pressure.

AUTHORS CONTRIBUTION

All authors participated in the design of the study

protocol, data collection and processing, drafting and reading of the manuscript.

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