Atrial fibrillation before 50 years: epidemiological, clinical and etiological aspects in Guinean cardiology

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Abstract
Atrial fibrillation is the most common heart rhythm disorder in humans. Although it mainly affects the elderly, it can also be present in young people. In the absence of treatment, atrial fibrillation can have serious complications, including stroke or heart failure. The absence of an earlier study on AF before 50 years in Guinea, the multiplicity of etiologies motivated the present work with the objectives of determining the magnitude of AF before 50 years and identify the most common etiology. This was a prospective study that included 20 cases of atrial fibrillation in subjects under 50 years of age in the cardiac department of Ignace Deen National Hospital between 1st December 2017 and 30th June 2018. Included in this study were all patients under the age of 50, regardless of sex, who have an FA diagnosed on a resting electrocardiogram. During the study period 80 cases of FA were collected on 398 hospitalizations or a hospital frequency of 20.1% of which 20 cases of FA in the subjects aged under 50 years were identified either a frequency of 5.02%. The most frequent age group was 20 to 29 years old, ie 40% with the extreme age of 11 and 49 for a median age of 34.2 years. The female gender was predominant, 65% versus 35% of the male gender. Valvulopathies and pericarditis accounted for the most common etiologies (60% and 15%, respectively). Atrial fibrillation is not only the prerogative of the elderly. Before the age of 50, the etiology is dominated by valvulopathies because of the endemicity of rheumatic fever in our tropical environments.

Keywords: Atrial fibrillation, less than 50 years. epidemiology, clinical, etiology, guinea

Introduction
Atrial fibrillation (AF) is the most common heart rhythm disorder in humans. Although it mainly affects the elderly, it can also be present in young people. In the absence of treatment, atrial fibrillation can have serious complications, including stroke or heart failure. Atrial fibrillation causes a wide range of more or less marked symptoms [1]. The severity of AF is related to the risk of thromboembolism (TE) and the risk of heart failure which is a function of the underlying cardiac disease [2]. It can be suspected clinically but can only be characterized on the ECG [2]. AF affects 3% of patients over 45 and 6.5% over 65 years. It is associated with a doubled mortality risk, an increase in strokes (risk multiplied on average by 4.5 times) and a risk of heart failure of 2 to 3 times higher [3].

Atrial fibrillation is responsible for 15 to 20% of all strokes [3]. One of the first explanations that come to mind when trying to elucidate the reason for the increase in the number of detected cases of FA In fact, it results from the frequent discretion of the symptoms of this arrhythmia [4]. It is observed, in fact, that FA produces typical symptoms only in 2/3 of the cases; in others, it remains clinically silent, or is accompanied by atypical and unclassifiable symptoms [5]. It can easily go unnoticed. Nowadays, more frequent use of the electrocardiogram, from primary care or screening examinations, has made it possible to identify numerous cases that previously would have been ignored [5]. Dysrhythmia is relatively easy but its therapeutic management is complex. The etiologies of FA are dominated in our context by valvular causes due to the endemic rheumatic
fever [6]. Management includes the search for underlying heart disease or curable cause, but also aims to: Prevent thromboembolic risk, restore and maintain sinus rhythm. If the latter option is not possible or indicated, control of ventricular rate to suppress symptoms and limit hemodynamic repercussions. Its management tends to be codified in recent years with the publication of several scientific works in the medical literature. This consensual approach even led to the homogenization of European and American recommendations within the same guidelines in 2006 [6]. The absence of an earlier study on AF before 50 years in Guinea, the multiplicity of etiologies motivated the present work with the objectives of determining the extent of AF before 50 years of age and identifying the most common etiology.

Patients and methods
This is a prospective study that examined 20 cases of atrial fibrillation in subjects aged less than 50 years in the cardiology department of Ignace Deen National Hospital between 1st December 2017 and 30th June 2018. This study included all patients under the age of 50, regardless of sex, who have an FA diagnosed on a resting electrocardiogram. The following parameters were analyzed in all patients included: Age, sex, occupation, functional signs, cardiovascular risk factors, etiology of FA, complications, outcomes of electrocardiogram, trans-thoracic ultrasound and biological assessment and treatment. Data capture and analysis were done using the MS word 2007, Excell 2007 and epi software info 3.7.4.

Results
Frequency
Eighty-five cases of AF were recorded in 398 hospitalizations, i.e. a hospital frequency of 20.1% of which 20 cases of FA in subjects aged under 50 years were identified, i.e. a frequency of 5.02% (Tables 1-11 and Figure 1).

Discussion
During the study period, 85 cases of FA were recorded in 398 hospitalizations, i.e a hospital frequency of 20.1% of which 20 cases of FA in subjects aged under 50 years of age were identified at a frequency of 5.02%. Our result is close to those reported by M’BAYE A. et al in Senegal in 2010 of 5.35% and Coulibaly

| Year        | Number | Percentage |
|-------------|--------|------------|
| 2017        | 20     | 50         |
| 2018        | 10     | 25         |
| Total       | 30     | 100.00     |

| Etiologies       | Effective | Percentage |
|------------------|-----------|------------|
| pericarditis     | 3         | 15         |
| HTA              | 2         | 10         |
| Heart Valve      | 12        | 60         |
| Congenital heart disease | 1 | 5 |
| hyperthyroidism  | 2         | 10         |
| Total            | 20        | 100.00     |

HTA: Hypertension

Table 1. Distribution by age group.

| Age groups | Effective | %  |
|------------|-----------|----|
| 10-19      | 4         | 20 |
| 20-29      | 8         | 40 |
| 30-39      | 5         | 25 |
| 40-49      | 3         | 15 |
| Total      | 20        | 100,00 |

Table 2. Distribution by socio-occupational categories.

| Socioprofessional categories | Effective | %  |
|------------------------------|-----------|----|
| Household                    | 10        | 50 |
| Official                     | 1         | 5  |
| Worker                       | 3         | 15 |
| Pupil/Student                | 6         | 30 |
| Total                        | 20        | 100,00 |

Table 3. Distribution by clinical signs.

| Clinical Signs | Effective | %  |
|----------------|-----------|----|
| Dyspnea        | 16        | 80 |
| Palpitations   | 20        | 100 |
| Chest pain     | 10        | 50 |
| Cough          | 6         | 30 |

Table 4. Distribution of patients by etiologies.
The most frequent age group was 20 to 29 years old, i.e., 40% with the extreme age of 11 and 49 for a median age of 34.2 years. The female gender was predominant, 65% versus 35% of the male gender. Our results are in line with those found in the work of SACCA-VEHOUNKPE J. et al. in Benin in 2014 and M’BAYE A. et al. in Senegal in 2010 which respectively report a female predominance of 50.6% compared to 49.4% for men [9] and 68.6% of women against 13.3% of men [7] unlike that of COULIBALY I. et al in Cote d’Ivoire in 2010, who report a male

Table 11. Distribution of patients by treatment received.

| Treatment received | Effective % |
|--------------------|-------------|
| Beta-blockers      | 16 80       |
| digitalis          | 8 40        |
| Amiodarone         | 18 90       |
| AVK                | 17 85       |
| AAP                | 3 15        |
| IEC                | 16 80       |
| Anti aldostérone   | 16 80       |

AAP: Anti aggregating platelet  
IEC: Converting enzyme inhibitor
predominance of 52% versus 48% of women with a sex ratio of 1.08 [8]. The housewives were the most represented socio-professional layer, ie 50% followed by pupils / students, ie 30%. Many studies in a tropical environment show the predominance of these two socio-professional layers. This is explained by the fact that these layers are the most disadvantaged in our environment and the cost are exposed to all kinds of diseases including cardiovascular. The clinical signs presented by the patients were respectively: 100% palpitations, 80% dyspnea, 50% chest pain and 30% cough, all of which are nonspecific signs of heart failure, in which more than half of the patients are hospitalized. Valvulopathies and pericarditis accounted for the most frequent etiologies (60% and 15% respectively) .M'BAYE A. et al. in Senegal in 2010 [7] and COULIBALY S. et al in Mali in 2012 [10] report the predominance of non-valvular causes of FA including hypertension and coronary heart disease contrary to our results or valvulopathies predominate. This predominance in our series is justified by the fact that valvular lesions caused by rheumatic fever are still prevalent in the tropics and represent one of the leading causes of illness in children and young adults on the one hand and others in children. the series of M'BAYE A. et al. in Senegal in 2010 [7] and COULIBALY S. et al in Mali included subjects of all ages. Left ventricular hypertrophy was associated with AF in 85% of patients. This result is superior to those of COULIBALY S. et al in Mali in 2012 [10] and Niankara [13] who reported respectively 13.3% and 50% of ventricular hypertrophy associated with FA.

The complications encountered were 80%, 10% and 5%, respectively, of heart failure, stroke and hemorrhagic stroke. Hemodynamically, the loss of atrial contraction and the poorly controlled ventricular rate lead to a reduction in blood pressure. cardiac output and increased pulmonary capillary pressure which may cause or decompensate heart failure [11]. Chronic fast AF may also result in left ventricular dysfunction achieving a generally reversible cardiac failure picture after ventricular rate control. The loss of atrial contractility is associated with the formation of intra-atrial thrombi which can induce systemic embolization [11]. According to the Framingham study, AF is associated with an increase in mortality of 1.5 to 1.9%, mainly related to thromboembolic complications3 [12]. The annual incidence of a patient's stroke in FA is estimated at 5%, ie 2 to 7 times higher than in the normal population [11]. GU dilatation was the most represented ultrasound anomaly (85%). Our result is close to that of COULIBALY S. et al in Mali in 2012 [10] or 80%. And is consistent with the literature which states that all circumstances that may lead to stretching or dilatation of the left atrium and pulmonary veins are favorable conditions for the development of AF [14]. In order to reduce FA Amiodarone has been prescribed in 90%. To slow down the FA beta blockers and Digitals were used in 80% and 40% of cases respectively. For the purpose of preventing thromboembolic events 15% of patients received PAAAs and 85% received AVK. Inhibitors of the conversion enzyme and anti-aldosterone have been prescribed in the heart failure card, 80% of cases concomitantly.

Conclusion
Atrial fibrillation is not only the prerogative of the elderly. Before the age of 50, the etiology is dominated by valvulopathies and this is due to the endemicity of rheumatic fever in our tropical environments. Heart failure and thromboembolic events are the most common complications.

The lack of trans oesophageal ultrasound, the absence of electrical cardioversion and the classification of FA according to the presence or absence of valvulopathy were the difficulties and limitations of our study.

Competing interests
The authors declare that they have no competing interests.

Authors’ contributions

| Authors’ contributions                  | BMD | BIS | BEY | CA | KD | KK | SA | DM | BMA | SM | SD | BM | CM |
|----------------------------------------|-----|-----|-----|----|----|----|----|----|-----|----|----|----|----|
| Research concept and design            | ✓   | ✓   | ✓   | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  | ✓  |
| Collection and/or assembly of data     | ✓   | ✓   | ✓   | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  | ✓  |
| Data analysis and interpretation       | ✓   | ✓   | ✓   | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  | ✓  |
| Writing the article                    | ✓   | ✓   | ✓   | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  | ✓  |
| Critical revision of the article       | ✓   | ✓   | ✓   | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  | ✓  |
| Final approval of article              | ✓   | ✓   | ✓   | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  | ✓  |
| Statistical analysis                   | ✓   | ✓   | ✓   | ✓  | ✓  | ✓  | ✓  | ✓  | ✓   | ✓  | ✓  | ✓  | ✓  |

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