Clinical Pattern and Outcome of Acute Heart Failure at the Yaounde Central Hospital

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Abstract

Background: Acute heart failure (AHF) is a major public health issue. Our objective was to study its clinical pattern and outcome in a reference hospital in Cameroon. **Methods**: This was a retrospective observational study, including any patient hospitalized for AHF, diagnosed based on clinical and/or ultrasound evidence, in the Cardiology Department of the Yaounde Central Hospital during a period of 3 years from January 1st 2013 to March 30th 2016. Data were entered and analyzed using the statistical software Epi info version 7.1.1.14. **Results**: A total of 148 patients with AHF were included over a total of 445 admissions. It accounted for 33.3% of admissions. The average age was 61.46 years. The female-male sex ratio was 1.34. The main cardiovascular risk factors were hypertension (54.79%). Dyspnea on exertion was the most prevalent symptom (86%). Hypertensive AHF was the most represented etiopathogenic entity in the series. The main electrocardiographic abnormality found (27.61%) was atrial fibrillation. Cardiomegaly was found in 44.76% of the cases. Hyponatraemia and anemia were found in about a quarter of the cases. On echocardiography, 49.61% of patients had heart failure with a preserved ejection fraction. The main findings were hypertensive heart disease (30.16%) and dilated cardiomyopathy (28.57%). Concerning the management, the most commonly used drugs on admission were loop diuretics; and on discharge, were ACE inhibitors/angiotensin II receptor blockers. Intrahospital mortality was 18.45%. **Conclusion**: AHF at the Yaounde Central Hospital occurs with severe clinical presentation, complicated by high intra-hospital mortality. Hypertension plays a predominant role both in its onset and in the underlying chronic cardiac involvement.

Subject Areas

Cardiology

1. Background

Heart failure (HF) is a major public health problem worldwide [1]. It is more of a syndrome than a primary diagnosis, with several potential etiologies, various presentations and clinical subtypes.

Acute heart failure (AHF) is characterized by the rapid onset of this syndrome, particularly marked by significant fluid overload with a predominance of signs and symptoms related to congestion [2].

The prevalence of AHF in sub-Saharan Africa continues to increase due to the aging of the population and the presence of hypertension [1]. In Cameroon, there is no national AHF register, but only a few studies on HF are conducted in selected hospitals [3] [4]. The aim of this work is to contribute to a better knowledge of the AHF at the Yaounde Central Hospital.

2. Material and Methods

We conducted an observational, descriptive and retrospective study in the Cardiology Department of YCH over a period of 3 years from January 1st 2013 to March 30th 2016. YCH is a second category reference hospital in Cameroon, and it serves as a university teaching hospital. The number of admission per year is. Patients over the age of 15, hospitalized for AHF were included by consecutive sampling.

Variables collected were socio-demographic, clinical, paraclinical, therapeutic modalities as well as intrahospital evolution.

Data were analyzed using Epi info version 7 software, results expressed as a percentage for the qualitative variables and as mean values with standard deviation for the quantitative variables.

3. Results

In the Cardiology Department of the Yaounde Central Hospital, AHF accounted for 30 and 33.3% of hospitalizations for the years 2014 and 2015 respectively, with a total of 148 patients included in the study. The average age was 61.46 years. A female predominance was noted with 1.34 women for 1 man. The main cardiovascular risk factors were hypertension (54.79%), diabetes (17.12%) and smoking (15.75%). The predominant clinical picture was that of congestive Heart Failure (Table 1).

Dyspnea on exertion was the most prevalent symptom (86%), with 65.85% at stage IV of the New York Heart Association (Figure 1).

Hypertensive AHF was the most frequent etiopathogenic entity in our series (Table 2).

Atrial fibrillation was the main electrocardiographic abnormality found

Table 1. Initial clinical presentation.

Clinical picture	Number	Percentage
Isolated right heart failure	11	7.91%
Isolated left heart failure	12	8.63%
Congestive heart failure	116	83.45%
Total	139	100%

Table 2. Etiopathogeny categories of AHF.

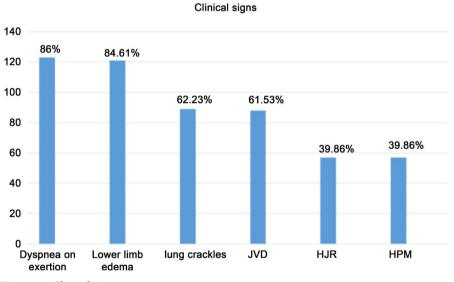| Category	Percentage
Hypertensive AHF	42.7%
Decompensated CHF	37.1%
Isolated right HF	12.36%
ACS complicated of heart failure	5.6%
Pulmonary edema	2.24%
Cardiogenic choc	00%
TOTAL	100%

Figure 1. Clinical signs.

(27.61%). Radiographic cardiomegaly was found in 44.76% of the cases. Hyponatremia and anemia were found in about a quarter of the cases. A majority of patients had heart failure with a preserved ejection fraction from echocardiography (Table 3).

The main decompensation factor identified in our series was hypertensive crisis. Similarly, hypertensive heart disease was the most common underlying cardiac disease (Table 4).

The main findings were hypertensive heart disease (30.16%) and dilated cardiomyopathy (28.57%).

Concerning therapeutics, the most commonly used drugs on admission and

Table 3. Classification according to left ventricular ejection fraction.

LVEF	Number	Percentage
More than 50%	63	49.61%
Less than 40%	44	34.65%
40% to 49%	20	15.75%
TOTAL	127	100.00%

Table 4. Cardiac diseases in our series.

Cardiac disease	Percentage
Hypertensive heart disease	30.16%
Dilated cardiomyopathy	28.57%
Valvular heart disease	11.90%
Chronic cor pulmonale	8.73%
Ischemic heart disease	6.35%
Pericardial diseases	3.96%
Peri partum cardiomyopathy	3.18%

discharge were loop diuretics and ACE inhibitors/angiotensin II receptor blockers. Hospital mortality was 18.45%.

4. Discussion

Globally, the hospital prevalence of heart failure is less than 10% [5] [6] [7] [8]. Higher values are found in most African series. These results confirm the predominant role of AHF in hospitals regardless of geographical location.

The mean age of patients with heart failure varies between studies from 64 to 77 years [9] [10]. Our patients had a mean age of 61.46 years [11], with a minimum of 16 years and a maximum of 96 years, which is consistent with the observations of other African studies on AHF [12]. Overall, patients with AHF in Africa are younger than those seen in developed countries [7] [13] [14] [15] [16]. This may be due to the accessibility of health care in developed countries, thus delaying the occurrence of factors favoring the development of this pathology.

Our series had a majority of women (57.43%), which is comparable to the findings of Sani MU *et al.* [17] and in two Haitian series [18] [19]. This could be explained by the predominance of hypertension in women and the presence of PPMC which occurs only in women.

Our findings are consistent with data from literature, presenting hypertension as the main factor associated with HF in sub-Saharan Africa. Diabetes and smoking are also the most common comorbidities associated with hypertension in patients with AHF [12] [13] [15].

Dyspnea on exertion in our patients was predominantly severe (stages 3 - 4), consistent with the findings of Okechukwu S. *et al.* in a series in Nigeria [20]. This reflected the advanced stage of HF before the consultation.

The most frequent electrocardiographic abnormality in our series was complete atrial fibrillation, which was permanently present in one quarter of the study population followed by left ventricular hypertrophy in 17.14% of cases. These two anomalies were also the most common in a similar study conducted at the Sylvanus Olympio Teaching Hospital in Lomé, Togo [15].

Majority (49%) of our patients had preserved systolic function. This differs from data in the literature, which finds predominant systolic dysfunction in sub-Saharan Africa [4] [12] [14]. The difference in classification of HF according to ejection fraction in different studies could explain this discrepancy [9].

Anemia was also found in 1/4 of patients and was most often multifactorial.

B-type Natriuretic peptides (BNP) were not assayed in our series. Their high cost and diagnosis confirmation using Framingham criteria makes it a diagnostic modality seldom used in our context.

In our series, hypertensive heart disease was the principal cardiac pathology detected by Doppler echocardiography, followed by dilated cardiomyopathy. Its preponderance in our study could be explained by the long evolution of hypertension in our context where screening is not frequently done, so it is often unknown by populations.

In Morocco, the predominant etiology is ischemic heart disease, as in European studies [4] [8] [21] [22] [23]. In our series, ischemic heart disease is poorly represented as it is the case in another African study [24]. The lack of thorough investigation methods, including invasive and non-invasive ischemia tests, may account for its low proportion in our series. As a result, the prevalence of coronary disease is not well defined in our environment and is certainly underestimated.

The use of diuretics, especially loop diuretics, forms the basis of AHF treatment in the hemodynamic stabilization phase. This was the case for 97.87% of cases in our series. These results are consistent with data found in the literature. The administration of ACE inhibitors/angiotensin II receptor blockers as well as other commonly used therapeutic classes was also consistent with medical practice worldwide [9] [12] [16] [25] [26].

The treatment on discharge in our series was not optimal in the majority of cases, with only 20.55% of betablockers and approximately 50% of ACEI/AIIRB, associated with diuretics in 93.24% of cases, which is similar to findings of Kingue *et al.* at the Yaounde General Hospital [4]. Ikama *et al.* in Brazzaville also found a small proportion of beta-blocker prescribed on patient discharge in their series [13].

American and European studies show that treatment recommendations for heart failure are poorly applied [16]. This is particularly true in sub-Saharan Africa, where the implementation of an optimal treatment with titration is particularly difficult because of the lack of patient follow-up.

In our series, AHF has a poor prognosis with 18.45% of intra-hospital deaths. A similar trend is described in Togo and Haiti with a hospital mortality of 16.4% and 12% respectively [15]. This varies between 5.5% - 14% in Portuguese series

and 3.8% - 12% in European registers [9]. All these reflect the seriousness of this pathology throughout the world, although its determinants vary according to geographical location.

5. Conclusion and Recommendations

Overall, our findings on AHF are similar to those in the literature in sub-Saharan Africa. The improvement of its management involves setting up multidisciplinary teams within organized health networks, as well as optimizing the technical platform.

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Declarations

Ethics approval and consent to participate

The protocol of this study was approuved by the institutional ethical committee of the Faculty of Medicine and Biomedical Sciences and the national ethical committee. And all participants written consent was obtained.

Consent for publication

All the authors give thier consent for publication of this manuscript.

Availability of data and material

Materials and data are availble.

Competing interests

The authors declare no conflict of interest.

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List of Abbreviations

AHF: Acute heart failure
HF: Heart failure
NYHA: New York Heart Association
PPMC: Peripartum myocardiopathy