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Heart Failure Characteristics and Difficulties of the Long-Term Follow-Up in Semi-Urban African Area: About A Prospective Study at the Hospital De La Paix in Ziguinchor (Southern Senegal)

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ABSTRACT

Background: Heart failure is a major public health problem in Africa where it is the main circumstance for the discovery of cardiovascular diseases. The objective of this work was to analyze the characteristics of heart failure in the African semi-urban zone and to identify the difficulties related to the long-term follow-up of heart failure patients at the hospital de la Paix in Ziguinchor (southern Senegal).

Method: We conducted a 1-year prospective study (March 2017 to March 2018) in the cardiology department of the hospital de la Paix in Ziguinchor (southern Senegal). We included in the study all patients of both sexes hospitalized for heart failure. The studied parameters were recorded on a data collection sheet.

Results: The mean age was 54.5 ± 19.1 years with male predominance (53.6%). The majority of our patients were of low socioeconomic status (38.3%). High blood pressure was the most common cardiovascular risk factor (37.4%). This was most commonly an overall heart failure (52%) and the most common clinical signs were NYHA dyspnea III and IV (96%), hepatopathies (51.5%), cough (50.6%) and edema of the lower limbs (72.8%). Electrocardiographic abnormalities were dominated by left ventricular hypertrophy (39.6%) and left ventricular function was impaired in 59.1% of cases on cardiac ultrasound. Isolated high blood pressure was the leading cause of heart failure (26.3%), followed by dilated cardiomyopathies (20.4%) and chronic lung hearts (13.1%). The in-hospital mortality rate was 20.9% and the overall mortality was 27.2%. Patients rehospitalized during follow-up accounted for 31.9% of cases while 17% of our patients were lost to follow-up. The main cause of cardiac decompensation in rehospitalized patients was therapeutic disruption.

Conclusion: Syndrome with multiple etiologies, heart failure is the evolutionary term of most heart disease. Prevention requires better management of cardiovascular risk factors and good education of patients with heart failure.

Keywords

Heart failure, Peace Hospital, Ziguinchor, Africa.

Background

Heart failure (HF) is defined as an inability of the heart to provide, under normal conditions, a blood flow necessary for the metabolic and functional needs of the various organs and/or a condition in which the heart provides for the needs of the body but with abnormally high filling pressures [1].

It is a major public health problem with a prevalence that varies between 0.3 and 2% of the general population and this prevalence

increases with age [1,2]. Despite significant advances in therapy, heart failure is a condition burdened with heavy mortality.

It is an affection still largely unexplored in Africa while its incidence is increasing. It accounts for about 30% of cardiac admissions in Africa [3]. In Senegal, HF represented 37.7% of admissions and is the main circumstance for the discovery of cardiovascular diseases [4].

The available data come mainly from Europe and the United States of America while the presentation of heart failure is not homogeneous and differences exist between the Northern countries and Africa. The objectives of this work were to describe the characteristics of HF in the African semi-urban area and to identify the difficulties encountered during long-term follow-up in our patients.

Methodology
We conducted a prospective and descriptive study over a period of 1 year (March 2017 to March 2018) in the cardiology department of the Ziguinchor Peace Hospital, southern Senegal.

We included patients of both sexes hospitalized for HF on a clinical and para-clinical basis (electrocardiogram, chest x-ray, and cardiac Doppler echocardiogram). The diagnostic criteria were those of the European Society of Cardiology. We had prepared a data sheet that provided support and included socio-demographic data, fieldwork, personal and family history, clinical and para-clinical data, progress in hospitalization and follow-up at 1 year. The data were analyzed using SPSS software version 22.

Results
We included 235 patients during the study period. HF accounted for more than one-third of cardiac hospitalization cases during the study period (33.5%). The mean age of our patients was 54.5 years (ranging from 5 to 89 years) with a male predominance accounting for 53.6% of our patients (sex ratio: 1.15).

Our patients were of low socioeconomic level in the majority (38.3%). High blood pressure (hypertension) was the main cardiovascular risk factor found (37.4%) (Figure 1). About 18.5% of our patients were already known to have heart disease.
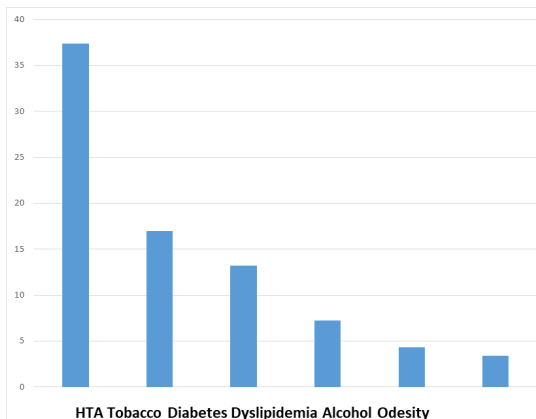

Figure 1 : Cardiovascular risk factors.

Dyspnea was the main clinical sign and was most often grade III to IV dyspnea of the New York Heart Association (NYHA) (Figure 2).
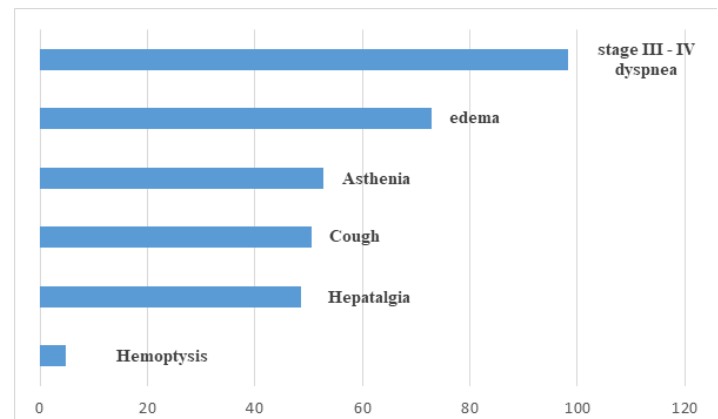

Figure 2: Clinical signs.

Overall heart failure was reported in 52% of cases, left heart failure in 31.9% of cases, and right heart failure in 16.1% of cases. Left ventricular hypertrophy (LVH) was the main finding of the electrocardiogram (ECG) (Table 1).

ECG signs	Number of cases	Percentage %
Normal	4	1,7
Auricular Flutter	4	1,7
Left atrial hypertrophy	6	2,6
Signs of necrosis	16	6,8
Left branch block	18	7,7
Low voltage	4	1,7
Left ventricular hypertrophy	93	39,6
Atrial fibrillation	30	12,8
Sinus Tachycardia	25	10,6
Right atrial hypertrophy	3	1,3
Right branch block	8	3,4
Right ventricular hypertrophy	20	8,5
Ventricular extrasystoles	2	0,9

Table 1: Electrocardiographic signs.

On cardiac Doppler ultrasonography, left ventricular (LV) systolic function was impaired in 59.1% of cases and normal in 40.9% of cases. Cardiomyopathies were the leading causes of heart failure (44.2%) followed by isolated hypertension, which accounted for 26% of heart failure cases.

Among cardiomyopathies, dilated cardiomyopathy was the most common (45.2%), followed by ischemic cardiomyopathies (27.3%), postpartum cardiomyopathies (11.3%), restrictive cardiomyopathies (9.6%) and HIV field cardiomyopathies (4.7%). Table 2 summarized the main etiologies of HF in our study.

Etiologies	Number of case	Percentage %
HTA	62	26,3
Ischemic cardiomyopathies	29	12,3
Dilated cardiomyopthies	48	20,4
Restrictive cardiomyopathies	10	4,2
HIV field cardiomyopathies	5	2,1
Postpartum cardiomyopathies	12	5,1
Chronic lung heart	31	13,1
Pulmonary embolism	2	0,8
Cardiothyreosis	1	0,4
Severe anemia	3	1,2
Pericarditis	5	2,1
Congenital heart disease	3	1,2
Rheumatic valvulopathies	24	10,8

Table 2: Etiologies of heart failure.

The mean hospital stay was 7.8 days (ranging from 1 to 38 days). 49 patients died (20.9%) during hospitalization, and 15 patients during follow-up at 1 year, representing an overall mortality of 27.2%. More than one-third of our patients were readmitted during follow-up (31.9%) and 40 patients were lost to follow-up.

The main cause of cardiac decompensation in hospitalized patients was therapeutic disruption (Table 3).

Causes	Number of cases	Percentage %
Therapeutic rupture	25	33,3
Atrial rythm disorders	10	13,3
Infections	8	10,6
Renal failure	3	4
Hypertensive thrust	11	14,6
Severe anemia	3	4
Traditional treatment	10	13,3
Diet eccart	5	6,9

Table 3: Causes of cardiac decompensation.

Discussion
The prevalence of heart failure varies between 0.3 and 2% of the general population [2,5]. This prevalence is still poorly known in Africa but everything seems to indicate that it is important because of the growing population in Africa, the increasing proportion of elderly people with the increase in life expectancy and the decline of infectious diseases.

The frequency of heart failure in cardiology hospitalization is important in Africa since it accounts for more than one-third of the causes of hospitalization in our service (33.5%). This trend is confirmed by the studies of THIAM [4] and PIO [6] which found respectively a frequency of 37.7% and 25.6%. This can be explained by the growing emergence of chronic noncommunicable diseases, while infectious diseases, although less significant than in the past, still remain an important cause of heart failure.

HF patients are younger in Africa than in the West or Asia. The average age of our patients was 54.5 years lower than in the Western and Asian series, where the average age is 70 [7, 8, 9, 10]. This may be due to earlier diagnosis and management of HF cases. The low socioeconomic level of the majority of our patients is also a source of delay in consultation and difficulties accessing treatment.

Hypertension was the most common modifiable risk factor for HF in our study as well as in several African series [6, 11]. Hypertension is the most important risk factor for HF. Hypertensive men and women have a substantially greater risk of developing heart failure than normotensive men and women [1]. Control strategies for hypertension are an important part of HF prevention.

The clinical presentation of HF in Africa is characterized by a high proportion of symptomatic patients. In our study 52% of our patients were in ICG whereas PIO [6] found 67% of ICG in their study. In Africa, more than 50% of patients present with stage III to IV of the NYHA [3]. This is due to the late consultation and also the late diagnosis. Most HF diagnoses were done on a clinical basis. The advent of the cardiac Doppler echocardiogram has made it possible to integrate cardiac insufficiencies with preserved systolic function.

All heart diseases can lead to HF. In our study, cardiomyopathies accounted for 44.2% of HF causes with strong heterogeneity dominated by dilated cardiomyopathies, ischemic cardiomyopathies, and postpartum cardiomyopathies. Rheumatic valvulopathies accounted for 10% of HF causes. HIV-related heart attacks, chronic lung hearts, and pericarditis accounted for 17.3% of HF cases. The causes of HF in developed countries are dominated by coronary heart disease [2,5,8], whereas in non-developing countries non-ischemic causes predominate (hypertension, dilated cardiomyopathies, rheumatic heart valve disease, chronic pulmonary heart disease). However, ischemic heart disease develops since it accounted for 12.3% of HF causes in our series and 27.3% of causes of cardiomyopathies.

HF mortality is high in Africa. In-hospital mortality was 20.9% and overall mortality after 1 year was 27.2% in our study. However, the intrahospital mortality is lower, ranging between 3 and 7% [9,12] in the western series, probably due to better conditions of care.

The mortality at 1 year was 11% for SAKATA [7] and 46.5% for ZANNAD [8]. Mortality during or after hospitalization for HF is particularly high, reaching 27.4% at 1 month and 46.5% at 1 year, the 5-year survival is of the order of 30% [13]. The mortality rate of HF is greater than that of myocardial infarction and that of several cancers [5].

The readmission rate after the first hospitalization for HF is high. In our study, 31.9% of our patients were rehospitalized. The rate of rehospitalization at 1 year ranged from 23% to 26% for SAKATA [7]. It was 27% at 6 months for TUNG [12] and 26% at 1 month in the VADER study [10].

HF is characterized by a very high rate of hospitalization; one in two patients is rehospitalized in the year following their diagnosis [13].

The main cause of cardiac decompensation in our series was a therapeutic break and a significant recourse to traditional therapy. This highlights the lack of therapeutic education in the majority of our patients which results in poor treatment compliance. The other black spot in the follow-up of our patients is the high number of patients lost to follow-up (17%).

The NCHO - MOTTOH study [14] showed that compliance with treatment is poor in black African heart failure because it is strongly influenced by traditional therapy, non-compliance with the appointments of control, drug intake, treatment, and low sodium diet. Adherence to treatment must be perfect. Adhesion below 80% is associated with a risk of excess mortality. Therapeutic education has been proven to reduce mortality and the frequency of rehospitalizations [13].

Quality therapeutic education can reduce the risk of re-hospitalization. Therapeutic education is an integral part of the recommendations for the management of HF from the European Society of Cardiology [13]. Unfortunately, only a minority of patients benefit of it in sub-Saharan Africa.

Conclusion

Our study showed that HF was common in cardiology department in Africa and that it involved relatively young patients. She confirmed the prominent role of hypertension as the leading risk factor in HF and the high proportion of patients who are seen with advanced HF. Etiologies are dominated by non-ischemic causes in contrast to Western series. The mortality rate is higher and the causes of decompensation are strongly influenced by the therapeutic breaks and the use of traditional medicine. This study shows that the management of HF in the African semi-urban zone is very insufficient and faces many obstacles.

The reduction of morbidity and mortality related to HF requires an effective policy to fight against cardiovascular risk factors, in particular hypertension and the erection of therapeutic education structures for patients with heart failure.

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