



Management and Etiological Profile of Heart Failure in a General Cardiology Department in Senegal: Cross-Sectional Study, Descriptive about 103 Cases

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Abstract

Objectives: The aim of this work was to assess the management and study the etiological profile of heart failure in a cardiology department in Dakar, Senegal.

Patients and methods: This was a cross-sectional, descriptive and analytical study carried out at the general hospital in Grand Yoff from June 01 to September 30, 2017, either a period of 4 months. Were included, patients aged at least 15 years and hospitalized for heart failure. The heart failure was retained in front of the clinical signs: either 2 of the major criteria (paroxysmal nocturnal or orthopnea dyspnea, pulmonary rale, venous distension, acute pulmonary edema, Gallop 3, hepatojugular reflux) or a major criterion associated with 2 of the minor criteria (ankle edema, nocturnal cough, exertional dyspnea, hepatomegaly, pleural effusion, tachycardia greater than 120 beats per min) and echocardiography which made it possible to differentiate the HF with preserved and altered ejection fractions. A data collection form was completed based on the patient records. All patients underwent a cardiovascular examination, an electrocardiogram and an echocardiography. Data collection was done using Sphinx V.5 software. The significance threshold was retained for a $p < 0.05$.

Results: We enrolled 103 heart failure patients. The average age was 58.92 years with a sex ratio of 1.02. Cardiovascular risk factors were dominated by age (65.05%) and high blood pressure (46.6%). Heart failure was global in 82.52% of cases. The ejection fraction of the left ventricle was altered ($< 40\%$) in 48% of patients. The etiologies dominated by dilated (35%) and ischemic (27.20%) cardiomyopathies. In the acute phase, the prescription was mainly composed of loop diuretics (92.2%), spironolactone (59.2%), and converting enzyme inhibitors (61.2%). At discharge, most of the patients were on diuretics, 60.20% of whom were on spironolactone and 28.20% on thiazide. Almost half of the patients were on ACE inhibitor (48.50%). Furthermore, 33% of the patients were on beta-blockers.

Conclusion: Heart failure was generally global with an ejection fraction of the left ventricle often lowered. The etiologies were dominated by dilated and ischemic cardiomyopathies. The treatment was mainly based on diuretics and ACE inhibitors.

Keywords: Heart failure; Treatment; Etiology; Dakar

Introduction

Heart Failure (HF) is a clinical syndrome characterized by symptoms (dyspnea and edema) possibly accompanied by clinical signs (pulmonary rales, edema of the lower limbs, increased jugular pressure) caused by an abnormality of the structure or cardiac function causing a decrease in cardiac output and an increase in intra cardiac pressure at rest or during exercise [1]. It is a frequent and serious pathology, responsible for a high morbidity and mortality. It represents one of

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Received Date: 23 Jan 2020

Accepted Date: 18 Feb 2020

Published Date: 25 Feb 2020

Citation:

Ngaide AA, Sow M, Gaye ND, Gnimbo B, Haris M, AW F, et al. Management and Etiological Profile of Heart Failure in a General Cardiology Department in Senegal: Cross-Sectional Study, Descriptive about 103 Cases. *Ann Cardiol Cardiovasc Med.* 2020; 4(1): 1035.

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the main factors in the discovery of cardiovascular diseases and poses a real public health problem. Thus, a study called epical has shown that the long-term mortality of patients hospitalized for severe HF is around 50% at two years with survival without re-hospitalization which reaches 10% at two years [2]. Yet therapeutic progress has been considerable, both medically and surgically.

Its prevalence in Europe is 0.4% to 2% and concerns 1% of the general population in France. Coronary artery disease appears to be one of the main causes. The prevalence of HF increases with age, less than 3% in patients under the age of 45 and 10% in patients over the age of 70 [3]. In Africa, despite the scarcity of work on HF, it is considered to be the major complication of high blood pressure and the leading cause of admission to a cardiological setting [4]. This pathology also has a significant impact from a financial point of view because the patients end up with a triple therapy at the outset, sometimes a quadruple. In terms of cost, it represents 1% to 2% of health expenditure in developed countries. The prognosis is fairly grim, especially in severe forms, leading to a major deterioration in the quality of life due to functional impairment, demanding treatments and the frequency of re-hospitalizations [5,6]. The objectives of our study were to study and determine the etiologies of heart failure in patients hospitalized at Grand Yoff General Hospital.

Methods

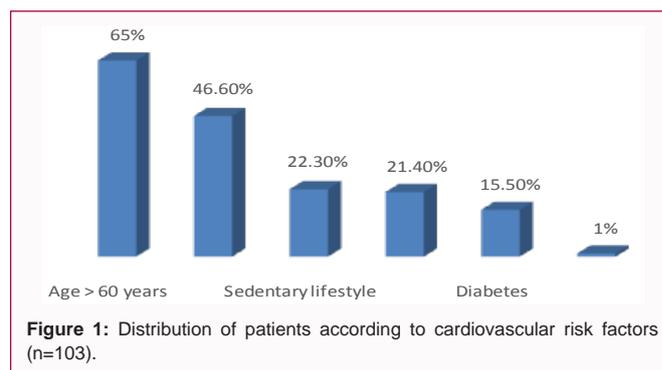
The study was carried out in the cardiology department of the Grand Yoff General Hospital. This is a prospective, transversal, descriptive and analytical study, carried out from June 01 to September 30, 2017 either a period of 4 months. Were included, patients aged 15 and over, hospitalized during the recruitment period for heart failure and whose records provided sufficient information, in particular on the etiology and management. The HF was retained in front of the clinical signs either 2 of the major criteria (paroxysmal nocturnal or orthopnea dyspnea, pulmonary rales, venous distension, acute pulmonary edema, Gallop 3, hepatojugular reflux) or a major criterion associated with 2 of the minor criteria (edema ankles, nocturnal cough, exertional dyspnea, hepatomegaly, pleural effusion, tachycardia greater than 120 beats per min) and echocardiography which had made it possible to differentiate the HF with preserved and altered ejection fractions but also for determining the etiology. Not included were patients with heart failure seen in an outpatient setting, those seen in the emergency department and patients whose diagnosis was not clearly established.

As for the course of the study, a structured questionnaire was developed, allowing the collection of information concerning marital status, history, physical and additional examinations, treatment and etiological profile. The cardiovascular risk factors studied were: advanced age, known hypertension treated or not, diabetes, dyslipidemia, physical inactivity, smoking and alcoholism). All the patients had benefited from a physical examination, an electrocardiogram examination carried out with a Schiller Switzerland brand electrocardiograph and a transthoracic echocardiography thanks to a Samsung brand echocardiograph. The trans-thoracic echocardiography was performed by a single cardiologist who has at least 4 years of experience. Heart failure associated with systolic dysfunction of the left ventricle is a HF with a Left Ventricular Ejection Fraction (LVEF) of less than 50%. The one with preserved systolic function corresponds to the presence of symptoms and signs of heart failure despite a LVEF >50%.

Data collection was done using Sphinx V.5 software. The data

Table 1: Distribution of the des etiologies according to the LVEF (n=103).

Etiologies	LVEF			Percentage
	<40	40-50	>50	
Dilated cardiomyopathy	74.30%	25.70%	0.00%	0
Ischemic heart disease	62.50%	16.70%	20.80%	0.236
Valvulopathy	10.00%	15.00%	75.00%	0
Hypertensive heart disease	14.30%	28.60%	57.10%	0.166
Chronic pulmonary heart	0.00%	33.30%	66.70%	0.23
Acute pulmonary heart	0.00%	33.30%	66.70%	0.23
Restrictive cardiomyopathy	50.00%	0.00%	50.00%	0.724
Congenital heart disease	0.00%	0.00%	100.00%	0.333



was analyzed with Microsoft Office Excel 2010 and SPSS version 2.1 processing software. For the interpretation of the results, the descriptive analysis of the quantitative variables was made using measures of central tendency (Mode, Arithmetic Average) and those of dispersion (standard deviation). The Khi- two tests was used to compare the qualitative variables. The significance threshold was retained for a value of p<0.05.

Results

One hundred and three patients were subjected to our study among the 215 patients hospitalized in the department during the period, either a hospital frequency of the HF of 47.91%. The 55 to 64 age group was the most represented (24.3%). The average age was 59 years and the sex ratio Male/Female was 1.02. Thirty-two percent (32%) of the patients had already been hospitalized and among them 92.7% were at least on their 3rd re-hospitalization. Cardiovascular risk factors were dominated by advanced age (65.05%), high blood pressure (46.6%), physical inactivity (22.3%) and smoking (21.4%) (Figure 1). High blood pressure (p=0.69) and physical inactivity (p=0.04) were more common in women. The most frequent history was represented by valvular heart disease (18.45%), dilated cardiomyopathy (5.82%) and ischemic heart disease (4.85%).

Clinically, dyspnea was the primary mode of disclosure of HF (93.2%). The other signs were dominated by edema (70.9%), cough (51.46%). The HF was global in 82.52% of the cases. At the electrocardiographic, the signs of overload of the left cavities were predominant with 20.39% of left ventricular hypertrophy and 13.59% of left atrial hypertrophy. The other anomalies were mainly represented by atrial fibrillation (25.24%) and sub-epicardial ischemia (22.33%).

The main anomalies found on trans-thoracic echocardiography were an alteration in the LVEF <40% in 48% of cases (Figure

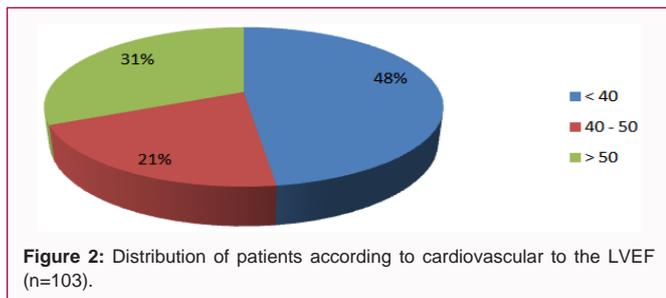


Figure 2: Distribution of patients according to cardiovascular to the LVEF (n=103).

2), valvulopathies with mitral insufficiency (18.40%) and aortic insufficiency (13.60%), mitral shrinkage (9.70%) and PAH (51.46%). On the front chest X-ray, cardiomegaly was found in 90.5% of the cases.

The etiologies found were mainly dilated cardiomyopathy with 35% of cases, ischemic cardiomyopathy (27.20%), valvulopathies (19.41%), hypertensive heart disease (6.8%) and pulmonary heart (8.8%) (Figure 3). There was a male predominance among those with dilated cardiomyopathy (p=0.001) and ischemic heart disease (p=0.006). On the other hand, the predominance was feminine in those carrying valvulopathy (p=0.001) and chronic pulmonary heart (p=0.039).

In lowered LVEF heart failure, the predominant etiology was represented by dilated cardiomyopathy (p=0.0001); on the other hand in heart failure with preserved LVEF, valvulopathies appeared as the most recurrent etiology (p=0.0001) (Table 1). The management of our patients was mainly based on diet and hygiene measures and drugs:

- In the acute phase, the drug prescription consisted of loop diuretics (92.2%), spironolactone (59.2%), ACE inhibitors (61.2%), angiotensin II receptor antagonists (9.7%), digoxin (18.4%) and only 4.9% of beta blockers. The other drugs were represented by nitrates with 35% of prescriptions, oxygen therapy (25.2%) and amines (5.8%).
- At discharge, most of our patients were on diuretic therapy, including 46.6% on furosemide, 60.20% on spironolactone and 28.20% on thiazides. Beta blockers represented 33% of prescriptions. Almost half of the patients were out on ACE inhibitors (48.50%). In addition, 3 patients carried pacemaker.

The average length of hospital stay was 9 days. Complications were noted in 18.44% of the cases with 14.56% of deaths. Factors related to mortality were: Female in 66.7% (p=0.162), congenital heart disease in 100% (p=0.016) and amine therapy in 66.7% of cases (p=0.000).

Discussion

Our survey shows that hypertension was the most frequent cardiovascular risk factor with a female predominance. This result is similar to that of Mebazza [7]. According to some studies [5,8], in developing countries, the estimated hypertension of hypertension should increase by 80% by 2025, with 1.15 billion hypertensives.

The study showed an alteration of the LVEF <40% in 48% of the cases. However, the sentinel network study found an altered FEVG in 42% of the cases [9]. In addition, the preserved systolic HF represented 44% of the population studied according to the study by Cohen et al. [10]. As for the etiology of HF, our data is similar to that found in Lome where dilated cardiomyopathy represented 60%

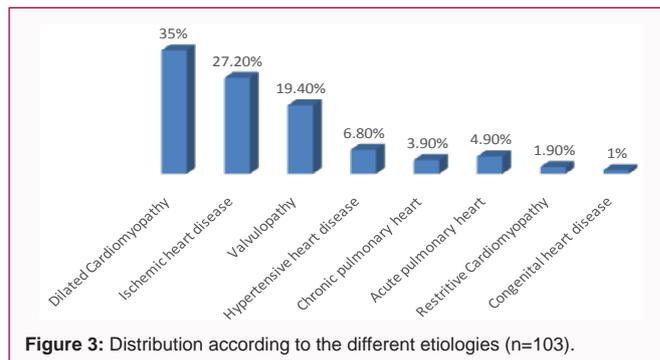


Figure 3: Distribution according to the different etiologies (n=103).

of cases [11]. But these data are different from those found in France where the etiology was dominated by ischemic cardiomyopathy with 46% against 10% of cases of dilated cardiomyopathy [9]. The high rate of altered LVEF and of the two most represented etiologies (dilated cardiomyopathy and ischemic heart disease) could be explained by the poor management of cardiovascular risk factors and the delay in managing heart disease in our regions.

As for the treatment of HF, our data are identical to those observed in Yaounde [4] and by Ezekowitz et al. [12] where diuretics and ACE inhibitors were the most used. In the series by Groote et al. [13] including 1,919 patients, diuretics (other than spironolactone) were prescribed in 83% of patients, spironolactone in 35% of cases. In 2012, the future study showed that diuretics were prescribed in 86% of patients and anti-aldosterone in 29% of patients with heart failure [10]. The value of spironolactone in HF has been demonstrated by the rales study [14]. Regarding ACE inhibitors, they have become the cornerstone of the treatment of HF [15]. In the future register [10] and the IMPACT-RECO study of 2009, the rate of prescription for ACE inhibitor was 83% and 71% respectively [16]. Beta blockers are currently an essential element in the treatment of chronic HF [15]. The future study showed that there is an improvement in the prescription of beta blockers and in this study 74% of patients had received beta blockers [10]. These results are different from those obtained in our study where the rate of prescriptions for beta blockers at the exit was 33%.

Regarding cardiac resynchronization, 7.77% of our patients had the indication of a multisite cardiac stimulation. It could not be carried out because of the insufficient financial means. However, the large companion care-HF studies have demonstrated the benefit of biventricular stimulation on symptoms [17,18] and capacity for exertion in patients whose ejection fraction is impaired with a QRS >120 ms and which remain symptomatic (NYHA Class II-IV) despite optimal medical treatment.

In addition, none of our patients have benefited from cardiac rehabilitation whereas it is an integral part of the management of heart failure according to the recommendations of the ESC 2018 (class I and level of evidence A), hence the need to promote the creation of a cardiovascular rehabilitation center. Our study recorded 14.56% of deaths during hospitalization. The association of HF with other pathologies can explain this mortality rate. In the rales study [14], there was a reduction in the risk of death and a significant functional improvement with spironolactone.

Conclusion

This work shows that Heart Failure (HF) is an extremely

heterogeneous condition due to its symptomatic spectrum, its numerous etiologies and its prognosis. It was generally global with an FEVG often lowered. The etiologies were dominated by dilated and ischemic cardiomyopathies. The treatment was exclusively drug based mainly on diuretics and ACE inhibitors. Factors related to mortality were: Female, congenital heart disease and amine therapy.

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