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Heart Failures within Yalgado Ouedraogo Teaching Hospital (Burkina Faso)

Koudougou Jonas Kologo[1,2*], Anna Tall-Thiam[1,2], Koulibi Julien Nabi[1,2], Yibar Kambire[1,3], Zoubadar Martin Some[2], Georges Rosario Christian Millogo[1,2], Sekou Traore[2], Wendkonta Reine Lydie Flora Kologo[2], Kiswensida Martin Nacanabo[2,4], Arthur Seghda[2,4], Nobila Valentin Yameogo[1,2], André Samadoulougou[1,4], Patrice Zabsonre[1,2]

[1]Yalgado Ouedraogo Teaching Hospital, Ouagadougou, Burkina Faso
[2]Cardiology Department, Health Sciences Training Unit, University Joseph KI-ZERBO, Ouagadougou, Burkina Faso
[3]Tengandogo Teaching Hospital, Ouagadougou, Burkina Faso
[4]Bogodogo Teaching Hospital, Ouagadougou, Burkina Faso
Email: *kologokj@yahoo.fr

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Abstract

Introduction/Objective: This study aims at studying the epidemiological, clinical, paraclinical, therapeutic and evolutionary profiles of acute heart failure. **Patients and Method:** This was a prospective and observational study conducted on 62 cases from February to April 2016. All the patients diagnosed with acute heart failure detected through clinical and echocardiographic findings were included in the study. Out-of-hospital follow-up of patients consisted in collecting clinical and paraclinical parameters at one week and one month after discharge from hospital. Multivariate regression was used to analyze the effect of the variables on the occurrence of death, with $p < 0.05$ as the threshold of significance. **Outcomes:** The prevalence of acute heart failure (AHF) in cardiology was estimated at 45.25%. The average age was 58.24 ± 19.04, with a sex ratio of 1.58. The clinical picture was that of congestive heart failure (87.10%) and right heart failure (08.06%) on admission. The ECG showed atrial fibrillation in 19.35% of cases. Thirty-five patients (54.10%) had impaired LVEF (< 40%). Furosemide injection was the dominant treatment. The average duration of the hospital stay was 9 days. In-hospital mortality was estimated at 11.30% and mortality at one month reached 3.64%. **Conclusion:** AHF is a frequent and serious syndrome in cardiology. Patients with cardiovascular collapse upon admission or with pre-existing HF have a bad prognosis.

Keywords

Heart Failure, Emergencies, Ouagadougou, Burkina Faso

1. Introduction

The term "Acute Heart Failure" encompasses a wide variety of clinical presentations, from acute pulmonary oedema (APO) to chronic decompensated heart failure including isolated right heart failure and cardiogenic shock [1]. In developed countries, heart failure prevalence is approximately 1% - 2% of the adult population, reaching a percentage above 10% among the over-70s [2]. This is the leading cause of hospitalization in cardiology departments in Africa, with a prevalence respectively estimated at 25.6% and 37.7% in Lomé and Dakar [3] [4]. Therapeutic management of acute heart failure focuses on symptom reduction and hemodynamic stabilization, in conjunction with specific treatment of a precipitating factor [1]. Its prognosis is severe, with 10% as the hospital mortality; this rate is close to 25% among patients over 70 years [5] [6]. Readmission rate at 60 - 90 days reaches 10% in Europe [1]. In Burkina, a study conducted in 2014 found a hospital mortality estimated at 12.8% [7]. The absence of universal health insurance in Burkina Faso and poverty represents specific challenges for the management of acute heart failure. In Africa, morbidity is estimated at 15% and mortality between 10% and 20%.

Previous studies conducted in Burkina have not addressed the out-of-hospital evolution and the impact of poor prognostic factors on mortality. Hence, our work aims to study the epidemiological, clinical, paraclinical, therapeutic and evolutionary aspects of acute heart failure.

2. Patients and Method

This was a retrospective observational, descriptive study conducted over a period of three (03) months, from February 1, 2016 to April 31, 2016 within the cardiology department of Yalgado Ouedraogo Teaching Hospital (CHU-YO) in Ouagadougou, BURKINA FASO. Patients admitted in the cardiology department of CHUYO and diagnosed with acute heart failure were included in the study. All patients were included in our study:

- Aged 15 years or over.
- The diagnosis of acute heart failure was established through physical examination and echocardiography of patients admitted within the department during the study period. Patients were followed-up for 3 months after hospitalization.
- The variables included: Socio-demographic data including age, sex, residence and occupation; Clinical parameters such as cardiovascular risk factors and general and physical signs; Electro-echocardiographic data including rhythm, conduction and repolarization abnormalities, left ventricular systolic function, cavity size, pericardium, segmental kinetics and pulmonary pressures; Biological data including hemoglobin level, creatinine, blood ion count.

3. Data Analysis and Processing

Data were entered on the software Epi Data version 3.1 and analyzed through STATA 13.1. Multivariate regression was used to analyze the effect of poor prog-

nostic variables on death occurrence. The test was statistically significant if $p < 0.05$.

4. Outcomes

4.1. Population General Characteristics

During the study period, 137 patients were hospitalized in cardiology department among which 62 for AHF, representing a hospital prevalence of 45.25%. The average age was 58.24 ± 19.04 years, with extremes of 15 and 88 years. The age range [55 - 75] accounted for 41.93% of cases. Our sample included 38 men and 24 women, giving a sex ratio of 1.58. Medical history was dominated by arterial hypertension (58.40%), followed by valvulopathy (9.68%). Dyspnea was the main symptom in 95.16% of cases among which: dyspnea stage III accounted for 41.930% of cases and dyspnea stage IV of NYHA for 45.16% of cases, followed by coughing. Table 1 presents the general characteristics of the 62 patients admitted for AHF.

Table 1. Population general characteristics.

Variables	Number (n = 62)	Percentage (%)
Sex		
Men	38	61.29
Women	24	38.71
Medical history		
AHT	34	58.40
Diabetes	03	04.84
COPD	02	03.23
Valvulopathy	06	09.68
Atrial fibrillation	01	01.61
Ischemic Stroke	01	01.61
Functional signs		
Dyspnea	59	95.16
Coughing	23	37.10
Chest pain	21	33.90
Palpitation	10	16.13
	09	14.52

4.2. Paraclinical Signs

All patients went through an electrocardiogram (ECG) upon admission, and 70.97% were sinus rhythm. Rhythm disorders were dominated by atrial fibrillation, followed by atrial flutter. More than half the patients had impaired LVEF and the majority had left ventricular dilatation. Forty-two patients (67.74%) had normal renal function. The following Table 2 presents the distribution of patients

according to paraclinical signs.

Table 2. Distribution of patients according to paraclinical signs.

Signs on ECG	Number (n)	Percentage (%)
Sinus rhythm	44	70.97
ST segment elevation	02	03.23
Atrial fibrillation	12	19.35
Flutter atrial	08	12.90
Ventricular extrasystole	6	19.35
Ventricular tachycardia	01	01.61
Echocardiographic data		
LVEF < 40%	34	54.10
≥40% LVEF <50%	12	19.67
LVEF ≥ 50%	16	26.23
Dilatation of the left ventricle	42	67.74
Dilated left atrium	43	69.35
Pulmonary hypertension	31	50
Mitral insufficiency	27	43.54
Global hypokinesia	22	35.48
Spontaneous intra-VG contrast	08	12.90
Severe pericarditis	02	03.23
Left ventricular thrombus	02	03.23
Biology		
High creatinine levels	20	32.26
Hyponatremia	16	25.80
Hypokalemia	11	17.74
hyperkalemia	2	03.23
Anemia	15	24.20

4.3. Clinical Presentation

Global cardiac decompensation was found in 88.74% of cases, followed by isolated right heart failure. Figure 1 presents the various clinical aspects of patients upon admission.

4.4. Etiology

Hypertensive heart disease was the most frequent etiology (33.87%), followed by ischemic heart disease (16.13%). The following figure shows the distribution of patients according to nomological entity (Figure 2).

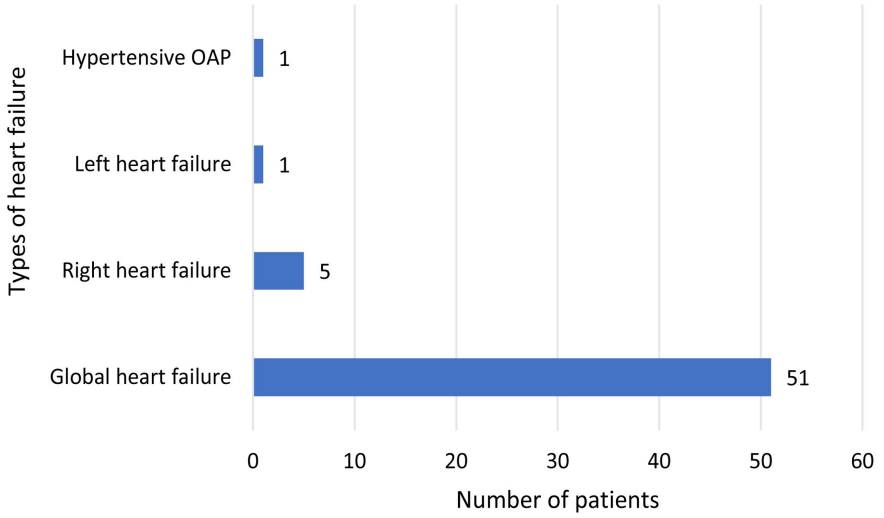

Figure 1. Distribution of patients according to the presentation mode of acute heart failure.

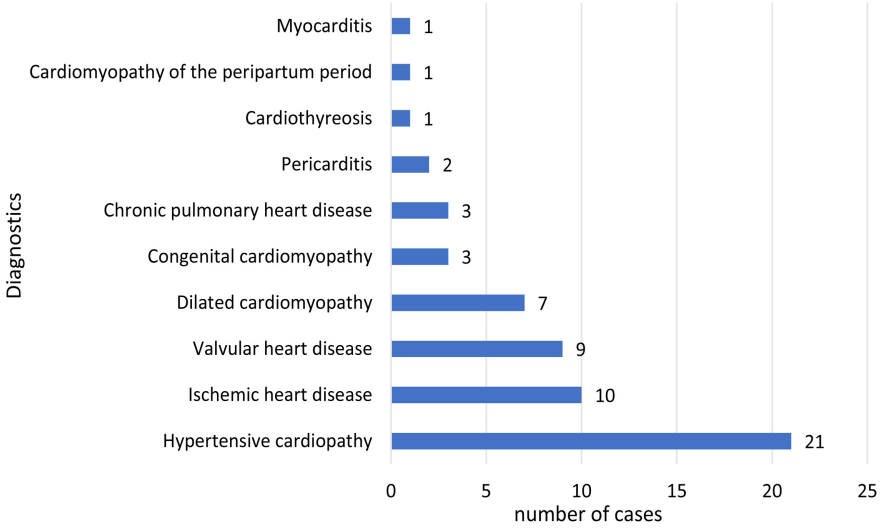

Figure 2. Distribution of patients according to diagnostics.

4.5. Treatment

Furosemide injection was the most prescribed drug (90.32%; n = 56), followed by ACE inhibitors (61.03%; n = 41). Drugs such as amiodarone and spironolactone were prescribed in respectively 10 and 42 patients. Digoxin was prescribed in three cases of atrial fibrillation, and in the other four cases it was used as an outpatient treatment. Parenteral treatments included enoxaparin and dobutamine in respectively 40 and 8 patients.

5. Clinical Evolution

5.1. Length of Hospital Stay

The average length of hospital stay was 9.70 ± 6.55 days, with extremes of 0 and 30 days. **Figure 3** presents the patients' hospital stay length.

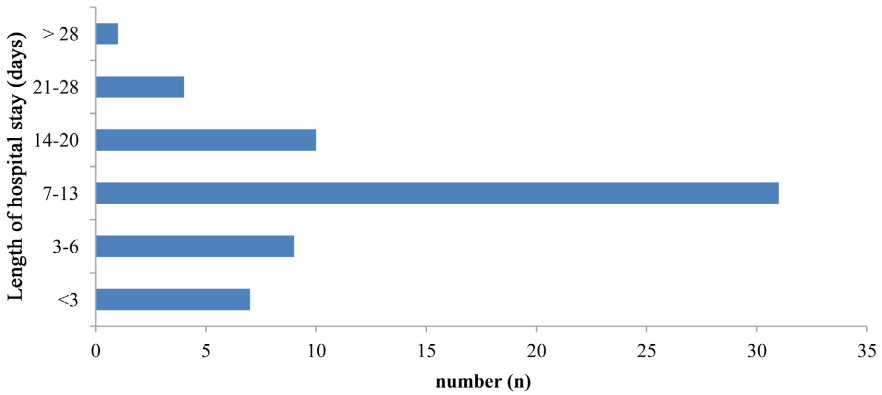

Figure 3. Distribution of patients as per length of hospital stay.

5.2. In-Hospital Mortality

The in-hospital death rate was estimated at 11.30%, corresponding to 07 patients, among which one occurred on the admission day. 87% of patients were discharged. The 02 women out of 24 died while 5 men out of 38 died. The difference was not significant (p = 0.69).

5.3. Patients' Evolution at One-Month Post-Hospitalization

Upon one-month of follow-up, 15 patients out of the 55 patients discharged from hospital were lost, corresponding to a rate of 27.27%. One patient was hospitalized again for cardiac decompensation, two weeks after being discharged from hospital, a stay during which he died (1.82%). Another patient died 5 days after outpatient treatment, bringing the overall one-month death rate to 03.64%. The other patients were all compensated, were still on treatment and had no complications.

5.4. Influence of Bad Prognostic Factors on Death Occurrence

We have tested the influence of bad prognostic factors on death occurrence. Among the various factors, only the death rate in patients admitted with low and not-low systolic blood pressure had a significant difference (p = 0.02) (Table 3).

Table 3. Multivariate analysis of death predictive factors during hospitalization.

Factors	Coefficient	P	HF (95%)
TAS < 90 mmHg	−0.20	0.02	0.02 - 0.38
Pre-existing HF	0.17	0.02	0.19 - 0.33
Renal failure	0.35	**0.43**	**−0.05 - 0.121**

6. Discussion

We encountered a number of difficulties in the course of our work. The main difficulties related to: the failure of some patients to comply with the schedule of visits, which prevented us from determining the actual rate of post-hospitalisation service; not all the echocardiographic parameters, such as the kinetics of the walls

of the left ventricle and pulmonary pressures, were systematically recorded; and the census of patients (some of whom could not be registered during the study period), due to the multi-site nature of our study. Also, the failure to carry out the prescribed (routine) paraclinical investigations (blood tests, X-rays) constituted a bias in the analysis of certain parameters. Selection bias may have been introduced because all our recruited heart failure patients had at least a cardiac ultrasound and an ECG. The hospital setting of our study does not allow us to generalise our results to the whole of Burkina Faso.

The prevalence of AHF in our department during the study period was 45.25%. Our results are close to those of Ouédraogo in Ouagadougou, who found 27.6% [7]. However, they were higher than those of Pio *et al.* in Lomé who found 25.6% [4]. Heart failure is getting more and more frequent, in parallel with the increase in cardiovascular risk factors.

Our study noted a male predominance with a sex ratio at 1.58. EFICA study has also noted a male predominance [8].

The average age was 58.24 ± 19.04 years, with extremes of 15 and 88 years. The age range [55 - 75 years] was the most represented group. Our results were lower than those observed in American and European series, whose average age was respectively 74 (ADHERE) and 73 years (EFICA) [8]. In underdeveloped countries, the high life expectancy and the later onset of ischemic and hypertensive heart diseases associated with improved management of pathologies such as coronary artery disease and hypertension in industrialized countries justify these discrepancies.

Congestive heart failure was present in 88.71% of cases among the clinical pictures of AHF upon admission within the department. Our results are above those found in other African series. Thiam *et al.* [3] in Dakar and Pio *et al.* [4] in Lomé have respectively found 67.6% and 67%. Dyspnea was the primary symptom observed by Coulibaly in Ségou, who noted 96.9% of patients admitted with dyspnea [9]. Indeed, dyspnea is the first sign of heart failure.

Ten patients (16.13%) had atrial fibrillation on ECG. This result was higher than that of Yassine Ragbaoui, who found 10.6% in Morocco [10]. This difference could be explained by the small number and young average age of our population.

In our study, LVEF was impaired in 54.10% of cases and preserved in 26.23% (diastolic heart failure). It was preserved in 11.40% of cases in the study by Pio *et al.* in Lomé [4].

In our series, 32.26% of cases had high creatinine levels. This figure is lower than that noted in the EFICA study, which was estimated at 53% [8]. This could be explained by the small size of our population and the young average age in our study compared with the one in EFICA study. Indeed, renal function deterioration increases with age.

In our study, hypertensive heart disease was the most frequent etiology (33.87%). Our results can be compared to African data on cardiovascular diseases, where hypertension is the most frequent etiology, followed by valvulopathy [11] [12].

Loop diuretics (furosemide) were the main medication used (90.32%), followed by ACE inhibitors. The latter were the most prescribed in Galinier' study [13]. Mohamed Hassane noted a use of diuretics in 96% of cases. This could be explained by the fact that congestive heart failure was the most displayed mode in our study. Indeed, loop diuretics are the cornerstone in the treatment for acute congestive heart failure [14]. Nowadays, the combination of SGLT2 inhibitors provides more satisfactory results [15] [16].

As for the average length of hospital stay, it was lower than that found in Jamal Kheyi's study who found 12.1 ± 6.6 days [17]. This could be due to the difference in the organization, the operation of the health care system and the management methods.

Hospital mortality was 11.30%, a rate lower than that found in Ikama' study in Congo and N'djessan in Abidjan, which were respectively 20.2% and 25.9% and is justified by the high number of comorbidities in their populations [11]. Our rate is lower than the rate found in EFICA study [8] in France (28%), and below the one of Thiam *et al.* in Dakar, which was 25.9% [3]. This difference could be related to the small size of our population. The rehospitalization rate was 1.82%. This low rate could be explained by the fact that 15 patients, corresponding to 27.27%, were lost to follow-up.

In our study, there was a statistically significant association between the rate of death and the low systolic blood pressure on admission; which corroborates literature data. Indeed, the mode of presentation remains the main determinant of early lethality [8]. Acute heart failure syndromes with shock are logically more serious, as shown by the EFICA results: the initial intrahospital lethality was 58% for patients with shock compared to 16% for patients without shock [8].

7. Conclusion

Acute heart failure is the leading cause of hospitalization within the cardiology department of Yalgado Ouedraogo Teaching Hospital. It is a serious syndrome with a long duration of hospitalization and a non-negligible intra-hospital lethality, all the more important when it is associated with collapse or cardiovascular shock upon admission. The implementation of a national program to combat arterial hypertension, the main etiology of heart failure in our context, could reduce the incidence of this syndrome. For better emergency management, the development of appropriate algorithms at each level of our health pyramid should help in reducing morbidity and mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Potton, L., Ara-Somohano, C., Schwebel, C. and Timsit, J.-F. (2013) L'insuffisance cardiaque aiguë aux urgences. *Journal Européen des Urgences et de Réanimation*, **25**, 65-73. https://doi.org/10.1016/j.jeurea.2013.03.003

[2] Ponikowski, P., Voors, A.A., Anker, S.D., Bueno, H., Cleland, J.G.F., Coats, A.J.S., *et al*. (2016) 2016 ESC Guidelines for the Diagnosis and Treatment of Acute and Chronic Heart Failure. *Kardiologia Polska*, **74**, 1037-1147. https://doi.org/10.5603/kp.2016.0141

[3] Thiam, M. (2003) Insuffisance cardiaque en milieu cardiologique africain. *Bulletin de la Societe de Pathologie Exotique*, **96**, 217-218.

[4] Pio, M., Afassinou, Y., Pessinaba, S., Baragou, S., N'djao, J., Atta, B., *et al*. (2014) Epidémiologie et étiologies des insuffisances cardiaques à Lomé. *Pan African Medical Journal*, **18**, Article 183.

[5] Lien, C.T.C., Gillespie, N.D., Struthers, A.D. and McMurdo, M.E.T. (2002) Heart Failure in Frail Elderly Patients: Diagnostic Difficulties, Co-Morbidities, Polypharmacy and Treatment Dilemmas. *European Journal of Heart Failure*, **4**, 91-98. https://doi.org/10.1016/s1388-9842(01)00200-8

[6] Gottdiener, J.S., Arnold, A.M., Aurigemma, G.P., Polak, J.F., Tracy, R.P., Kitzman, D.W., *et al*. (2000) Predictors of Congestive Heart Failure in the Elderly: The Cardiovascular Health Study. *Journal of the American College of Cardiology*, **35**, 1628-1637. https://doi.org/10.1016/s0735-1097(00)00582-9

[7] Naibe, T.D. (2005) Insuffisances cardiaques: Aspects épidémiologiques, cliniques et évolutifs, à propos de 172 cas colligés dans le service de cardiologie du CHU-YO.

[8] Alla, F. and Zannad, F. (2006) Épidémiologie du syndrome dïnsuffisance cardiaque aiguë. In: Alla, F. and Zannad, F., Eds., *L'insuffisance cardiaque aiguë*, Springer, 19-31. https://doi.org/10.1007/978-2-287-34066-6_2

[9] Coulibaly, H.J.B. (2018) Etude épidemiologique, clinique et thérapeutique de l'insuffisance cardiaque chez l adulte à l hôpital Nianankoro Fomba de Ségou. Université des Sciences, des Techniques et des Technologies de Bamako.

[10] Ragbaoui, Y., Chehbouni, C., Hammiri, A.E. and Habbal, R. (2017) Epidémiologie de l'association fibrillation atriale et insuffisance cardiaque. *Pan African Medical Journal*, **26**, Article 116. https://doi.org/10.11604/pamj.2017.26.116.11470

[11] Ikama, M.S., Kimbally-Kaky, G., Gombet, T., Ellenga-Mbolla, B.F., Dilou-Bassemouka, L., Mongo-Ngamani, S., *et al*. (2008) Insuffisance cardiaque du sujet âgé à brazzaville: Aspects cliniques, étiologiques et évolutifs. *Medecine Tropicale*, **68**, 257-260.

[12] Mboup, M.C., Dia, K. and Fall, P.D. (2013) Insuffisance cardiaque à fraction d'ejection preservee en afrique sub-saharienne: à propos de 32 cas. *Pan African Medical Journal*, **16**, Article 100. https://doi.org/10.11604/pamj.2013.16.100.2323

[13] Galinier, M. (2008) Insuffisance cardiaque à fraction d'éjection préservée. *La Presse Médicale*, **37**, 1121-1131. https://doi.org/10.1016/j.lpm.2007.09.017

[14] Delignette, M., Chaffard, C., Orion, M. and Blet, A. (2024) Gestion périopératoire des nouveaux traitements médicamenteux de l'insuffisance cardiaque. *Le Praticien en Anesthésie Réanimation*, **28**, 267-278. https://doi.org/10.1016/j.pratan.2024.09.003

[15] N'cho-Mottoh, M.B., Coulibaly, I., Koffi, F., Angoran, I., Bamba-Kamagaté, D., Traoré, F., *et al*. (2022) Les cardiologues ouest-africains suivent-ils les «guidelines» sur la prise en charge de l'insuffisance cardiaque? *Annales de Cardiologie et d'Angéiologie*, **71**, 208-214. https://doi.org/10.1016/j.ancard.2022.08.005

[16] Scheen, A. and Lancellotti, P. (2021) Inhibiteurs des SGLT2: Nouvelle option pour prévenir ou traiter l'insuffisance cardiaque. *Revue Médicale de Liège*, **76**.

[17] Kheyi, J., Benelmakki, A., Bouzelmat, H. and Chaib, A. (2016) Epidémiologie et prise en charge de l'insuffisance cardiaque dans un centre marocain. *Pan African Medical Journal*, **24**, Article 85. https://doi.org/10.11604/pamj.2016.24.85.8521