Scientific Research Publishing

World Journal of Cardiovascular Diseases, 2025, 15(6), 316-321
https://www.scirp.org/journal/wjcd
ISSN Online: 2164-5337
ISSN Print: 2164-5329

Cardiogenic Shock: Epidemiological, Clinical and Management Aspects in the Cardiology Department of Chu Ignace Deen

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How to cite this paper: Bah, M.B., Keita, F.B., Camara, O.M., Barry, I.S., Diallo, H., Koné, A., Baldé, E.Y. and Baldé, M.D. (2025) Cardiogenic Shock: Epidemiological, Clinical and Management Aspects in the Cardiology Department of Chu Ignace Deen. *World Journal of Cardiovascular Diseases*, **15**, 316-321.
https://doi.org/10.4236/wjcd.2025.156026

Received: March 20, 2025
Accepted: June 22, 2025
Published: June 25, 2025

Abstract

Introduction: Cardiogenic shock is a frequent complication in cardiology, particularly in ischemic cardiomyopathy and advanced heart failure. The aim of our study was to describe the epidemiological, clinical and therapeutic aspects of cardiogenic shock at the Ignace Deen University Hospital in Conakry. **Material and Method**: This was a longitudinal descriptive study lasting 06 months, from December 1, 2023 to May 31, 2024, in the cardiology department of Ignace Deen Hospital, Conakry. **Results**: During the study period, 346 patients were admitted to the department, including 31 cases of cardiogenic shock (8.96%). The mean age of our patients was 65.6 ± 18.9 years. The sex ratio was 0.55. The most frequent underlying cardiopathies were ischemic heart disease (38.7%), hypertensive heart disease (22.58%) and dilated cardiomyopathy (16%). Treatment was based on dobutamine (94%) and noradrenaline (6%), while treatment of underlying heart disease was dominated by diuretics (56.3%) and anticoagulants (37.6%). Short-term prognosis was good in 83.87% of cases, and poor (death) in 16.12%. **Conclusion**: Cardiogenic shock is a frequent emergency in the cardiology department of the Hospital National Ignace Deen. Prevention requires screening and treatment of etiologies, in particular hypertension and coronary artery disease.

Keywords

Cardiogenic Shock, Cardiology, Ignace Deen

1. Introduction

Cardiogenic shock is defined as acute circulatory failure linked to primary myocardial dysfunction. The inability of the ventricular pump to generate oxygen de-

livery in line with metabolic requirements leads to tissue hypoxia and organ dysfunction, with the patient's vital prognosis at stake [1].

The incidence of cardiogenic shock had been stable for decades at between 60,000 and 70,000 people per year in Europe and around 40,000 to 50,000 new cases per year in the United States [2]; in France, the FAST-MI registry in 2015 estimated 2.8% the rate of MI evolving into cardiogenic shock, which represents a significant decline throughout the last 15 years [1]; in Africa, In Côte d'Ivoire, Adoubi *et al.* in their study had reported 30.6% cases of cardiogenic shock in 2010 [3], Sylla *et al.* in 2019 found 13.4% cases of cardiogenic shock in Guinea [4]. The diagnosis of cardiogenic shock is evoked on clinical examination, with the existence of arterial hypotension associated with signs of hypoxia: oliguria, skin mottling, cold extremities, cyanosis, disturbed consciousness and reduced pulse pressure. Hyperlactatemia is one of the signs of tissue hypo-perfusion, and the cardiogenic nature is confirmed by ventricular pump dysfunction, after exclusion or correction of hypovolemia [5].

Various causes of left and right ventricular dysfunction can give rise to cardiogenic shock. According to recent registries, around a third of cardiogenic shocks are currently linked to acute myocardial infarction, while acute decompensated chronic heart failure may account for up to 30% of cardiogenic shock cases [5]. Other etiologies may also be involved, such as myocarditis, toxic agents or arrhythmias [6].

The management of cardiogenic shock is complex and multidisciplinary, involving cardiologists, imaging specialists (echographers, radiologists), cardiac surgeons and anesthesiologists, with a hospital mortality rate of 50%.

The management and treatment of Cardiogenic Shock depend on its etiology [7]. Inotropic and vasoactive therapies are the mainstays of treatment for cardiogenic shock, with catecholamines such as dobutamine and noradrenaline used as first-line therapy, and, in severe or refractory forms, adrenaline, which has been shown to improve the hemodynamic profile [8].

In the case of refractory cardiogenic shock, mechanical assistance may be introduced in certain well-selected patients. Ideally, its introduction and indication should be the subject of ethical discussion [8].

The aim of our study was to describe the epidemiological, clinical and therapeutic aspects of cardiogenic shock at the Ignace Deen University Hospital in Conakry.

2. Patients and Methods

Our study focused on patients hospitalized for cardiogenic shock in the cardiology department of Ignace Deen Hospital in Conakry. It was a prospective longitudinal descriptive study lasting 06 months, from December 1, 2023 to May 31, 2024.

All patients meeting the diagnostic criteria for cardiogenic shock, namely: systolic blood pressure below 90 mmHg; diastolic blood pressure below 60 mmHg; cardiovascular disease with signs of cardiogenic shock (mottling, pale or cyanotic

cold extremities, polypnoea, oliguria, somnolence, anxiety, agitation, confusion or even coma) were included.

Patients with septic and hemorrhagic shock were excluded. Patients with significant missing data in the medical record were also excluded.

Clinical, paraclinical, and demographic data for each patient were collected retrospectively using computer records recorded in kobotoolbox software and then anonymized using SPSS software. The demographic data collected were: age, sex, cardiovascular risk factors, history of cardiovascular and/or chronic pathologies, drug treatments.

3. Results

During the study period, we recorded 346 patients, including 31 cases of cardiogenic shock (8.96%), with an average age of 65.6 ± 18.9 years, ranging from 15 to 89 years (Table 1). The majority were women, with a sex ratio of 0.55 (Table 1). In terms of etiology, the most frequent underlying cardiopathies were acute coronary syndrome (38.7%), hypertensive heart disease (22.58%) and dilated cardiomyopathy (16%) (Table 2). Treatment was dobutamine-based (80.6%) and noradrenaline (19.5%), the short-term prognosis was good in 83.87% and poor (death) in 16.12% of cases (Table 3).

Table 1. Distribution of patients by epidemiological characteristics.

Features		Numbers (n = 31)	Percentage (%)
Age (years)			
-	15 - 25	3	9.7
-	26 - 36	1	3.2
-	37 - 47	3	9.7
-	48 - 58	4	12.9
-	59 - 69	12	38.7
-	≥70	8	25.8
Average and [extremes]		65.6 ± 18.9	[15 - 89]
Gender			
Female		20	65
Male		11	35
Ratio (M/F)		0.55	
Cardiovascular risk factors			
HTA		10	32.25
Diabetes		5	16.12
Smoking		4	12.90
Dyslipidemia		2	6.45
Obesit		1	3.22

Table 2. Distribution of patients according to underlying heart disease.

Heart disease	Numbers (n = 31)	Percentages (%)
Acute coronary syndrome	12	38.7
Hypertensive heart disease	7	22.58
Dilated cardiomyopathy	5	16
Valvulopathy	4	12.9
Hypertrophic cardiomyopathy	2	6.4
Other	1	3.2

Table 3. Distribution of patients by treatment.

Features	Numbers (n = 31)	Percentages (%)
Treatment		
Dobutamine	25	80.6
Noradrenaline	6	19.5
Evolution		
Favorable	26	83.87
Unfavorable	5	16.12

4. Discussion

During the study period, we found a frequency of 8.96%, this is far higher than that of Mboup *et al.* in 2014 in Dakar, Senegal, who in their study had reported 3.4% cardiogenic shock. This difference in results could be explained by the longer duration of our study [9].

In our series, women were the most affected with 65% for a M/F sex ratio of 0.55. This female predominance has been noted by other authors such as Ngongang *et al.* in Cameroon in 2018, Sako M *et al.* in 2024 in Mali with respectively 62.5% and a sex ratio of 0.48, including cardiogenic shock [10] [11].

The mean age of our patients was 65.6 ± 18.9 years, with extremes of 15 and 89 years. The 59

- 69 age group was the most represented with 38.7%. Our results corroborate data in the literature according to which advanced age is a risk factor for the onset of cardiogenic shock [12]. Carillo-Alleman *et al.* in Portugal in 2023 reported an average age of 73.8 years [13].

The risk factors found in this series were dominated by arterial hypertension (32.25%), diabetes (16.12%) and smoking (12.90%). Our results are in line with those of Sory 2 *et al.* in Guinea in 2019, in whom the risk factors were essentially represented by hypertension (27.7%), diabetes (11.4%) and smoking (10.1%), also identical to the results of Sako M *et al.* [10] in 2024 in Mali, who in their study found that hypertension was the most recurrent cardiovascular risk factor (n = 45), *i.e.* 56.25% of cases, followed by diabetes (n = 22), *i.e.* 27.5% of cases [4] [10];

Hypertension and diabetes being major risk factors due to their combined impact on the heart and blood vessels could explain these results.

In terms of treatment, the vast majority of our patients (94%) were on dobutamine, compared with 6% who were on noradrenaline. Our results corroborate the literature, which affirms that dobutamine is the treatment of choice and noradrenaline the ideal vasopressor. Symptomatic treatment is based on depletion by diuretic or ultrafiltration if necessary, and oxygen therapy, or even support by mechanical ventilation [14]. Kolte *et al.* in the USA reported 23.6% and 14.5% administration of dobutamine and noradrenaline [15].

The prognosis was good in the majority of cases (83.87%) and poor (death) in 16.12%. Our results are comparable to those of Mboliasa *et al.* in Kinshasa in 2015, who reported 62.5% deaths due to cardiogenic shock, and this high mortality could be explained by a long consultation delay leading to a delay in diagnosis and management of patients [16].

5. Conclusion

Cardiogenic shock is a frequent and serious medical emergency in the cardiology department of the Hôpital National Ignace Deen. Although the prognosis often remains dismal, advances in treatment, such as prompt management of underlying causes, the use of circulatory support devices and drug therapies, have improved survival rates. However, a short consultation time would facilitate diagnosis and rapid management, which would considerably reduce mortality.

Acknowledgements

We would like to thank all those who contributed to this study.

Authors' Contributions

All authors have read and approved the final, revised version of this article.

Keita Fatoumata Binta and Camara Ousmane Mamadama, contributed to the design of the study and discussion of the results.

Keita Fatoumata Binta and Camara Ousmane Mamadama and contributed to data collection and analysis of the study's statistical data.

Bah Mamadou Bassirou Mariame took an active part in drafting the manuscript and editing the article, ensuring the accuracy and clarity of the information presented.

Conflicts of Interest

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

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