

Epidemioclinics, Etiologies and Prognosis of Cardiogene Shock State in the Intensive Care Unit of the Cardiology Department of the G-Spot Hospital

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Abstract

Objective: The work aimed to describe the etiological and evolutionary aspects of cardiogenic shock in the intensive care unit of the cardiology department (USIC) of the G-spot hospital in Bamako, Mali. **Materials and Methods:** This was a descriptive cross-sectional study from January 1, 2018 to April 30, 2019 that included all patients admitted to the USIC during this period. Each patient benefited from individual data support with systematic recording of socio-demographic, clinical, complementary and therapeutic data and analyzed with the SOFTWARE SPSS 20.0 French version. **Results:** The study involved 40 patients out of 311 patients hospitalized in USIC, representing a hospital frequency of 12.86%. Males were the most affected (60%) with a sex ratio of 1.50. The modal class was 41 - 60 years with extremes at 18 years and 89 years. Cardiovascular risk factors were dominated by HTA (27.50%), diabetes and tobacco, each with 22.50%. The general signs were tachycardia (90%), oxygen desaturation (77.50%), impregnable blood pressure (62.50%), agitation (52.50%) and an oliguria (70%). At the electrocardiogram the rhythm was sinus (80%), it was an atrial fibrillation (15%), a ventricular tachycardia (10%) and signs of coronary ischemia (necrosis in 35% and ST over shifted in 20% of cases). At cardiac doppler ultrasound, the left ventricle was dilated (50%), the right cavities dilated (30%), segmental kinetic disorder (40%), the

left ventricular systolic function (FEVG) impaired (75%) and valve disease (10%). Biology noted hyper-creatinemia (65%), hyper-glycemia (12.50%), anemia and hyponatremia with 20% frequency each. Among etiology, ischemic heart disease accounted for 57.50% followed by pulmonary embolism 20%, dilated valve cardiomyopathy 7.50% and chronic pulmonary heart 2.50%. The trend in the majority of cases was unfavorable with 60% of deaths. Chronic pulmonary heart and pulmonary embolism were the deadliest with a frequency of 100% and 87.50% respectively. **Conclusion:** Cardiogenic shock is an infrequent condition with a high mortality of a prognosis. Ischemic heart disease is the most common etiology of the disease.

Keywords

Cardiogenic Shock, Etiology, Prognostic,USIC, Hospital Point G

1. Introduction

Cardiogenic shock is the most severe form of acute heart failure and is a major public health problem. This is an acute and severe failure of the heart pump, concerning systolic or diastolic function resulting in a profound alteration of tissue perfusion and progressive tissue anoxia. It combines a decrease in heart rate and the stigma of tissue hypoxia, in the absence of signs of hypovolemia. The hemodynamic criteria for cardiogenic shock are:

Lower systolic blood pressure 90 mmHg, for at least 30;

Low heart rate (lower index 2.2 L/min/m^2);

PAP0 pulmonary occlusion blood pressure greater than 15 mmHg [1].

The GUSTO-1 study reports an incidence of 7.2% [2]. A similar incidence (7.1%) is observed in Worcester on a population of 9000 patients who arrived alive at the hospital [3].

The exact incidence of cardiogenic shock is difficult to measure. In Mali, although there are no national statistics on cardiogenic shock, clinical hospitalization reports have shown that it is a major public health problem. So, we proposed to carry out this etiological and prognostic study of the state of cardiogenic shock in the cardiogenic intensive care unit.

2. Materials and Methods

This was a cross-sectional and descriptive study from January 1, 2018 to April 30, 2019 in the Cardiologic Intensive Care Unit (USIC) of The Point G Hospital and concerned all patients hospitalized during the study period.

The inclusion criteria were all patients of both sexes and ages hospitalized in the cardiogenic shock intensive care unit.

The exclusion criteria were other cardiovascular emergencies without cardiogenic shock.

Data collection and analysis each patient benefited from individual data support with systematic recording of socio-demographic, clinical, complementary

and therapeutic data and analyzed with the SPSS 20.0 French version software.

3. Results

During the study period, out of 311 patients admitted to USIC, 40 patients were for cardiogenic shock, with a hospital prevalence of 12.86%. The average age was 55.95% with extremes at 18 years and 80 years. The modal class was 41 - 60 years old. The predominance was male (60%) with a sex ratio of 1.50. The pre-eminence of HTA among risk factors was classic (27.50%), followed by diabetes and smoking with 22.50% each. The main general signs were tachycardia (90%), oxygen desaturation (77.50%), impregnable blood pressure (TA) (62.50%), agitation (52.50%), oliguria (75%) and an alteration of consciousness (20%) (**Table 1**). Heart sounds were deafened in 97.50% with a third B3 overlaid noise in 60% of cases to cardiac auscultation. The electrocardiogram recorded a sinus rhythm in 80% of cases, it was an atrial fibrillation (15%), ventricular tachycardia with 10% frequency and signs of coronary ischemia (necrosis in 35% and ST over shifted in 20% of cases). At cardiac doppler ultrasound the left ventricle was dilated (50%), the right cavities dilated (30%), segmental kinetic disorder (40%), the left ventricular systolic function (FEVG) impaired (75%) and valvulopathies (10%). Biology noted hyper-creatinemia in 65% of cases, hyper-glucose in 12.50% of cases, anemia and hyponatremia with 20% frequency each and one case of hyperthyroidism (2.50%). Etiologies were ischemic heart disease in 57.50% of cases followed by pulmonary embolism 20%, valve dilated cardiomyopathy 7.50% and chronic pulmonary heart 2.50% (**Table 2**). In both sexes the dominant nosological group was ischemic heart disease with 15% of cases in the female sex and 42.50% in the male sex. The trend in the majority of cases was unfavorable with 60% of deaths. The case fatality rate was 79.16% for men and 31.25% for women. Chronic pulmonary heart and pulmonary embolism were the deadliest with a frequency of 100% and 87.50% respectively (**Table 3**).

Table 1. Hemodynamic signs.

Hémodynamic signs	EFFECTIVES	FREQUENCY %
Agitation	21	52.5
Alteration of conscious	8	20
Oxygen desaturation	31	77.5
Impregnable blood pressure	25	62.5
Tachycardia	36	90
Oliguria	30	75

Table 2. Etiologies.

Etiologies	EFFECTIVES	FREQUENCY %
Ischemic Heart Disease (MDI)	23	57.5
Severe pulmonary embolism	8	20

Continued

Peri partum cardiomyopathy	5	12.5
Valve dilated cardiomyopathy	3	7.5
Chronic pulmonary heart	1	2.5

Table 3. Mortality and etiology.

Etiology	Mortalité	
	EFFECTIVES	FREQUENCY %
Chronic pulmonary heart	1	100
Severe pulmonary embolism	7	87.5
Ischemic heart disease	14	60.86
Valve dilated cardiomyopathy	1	33.33
Peri partum cardiomyopathy	1	20
TOTAL	24	60

4. Discussions

During the study period on 311 patients hospitalized in the USIC of POINT G 40 had cardiogenic shock, with a hospital prevalence of 12.86%. Our rate was well below the 46.76% of Abrik [4]. This difference could be explained by the presence of a general resuscitation service at the Point G hospital that supports some of these patients. The average age in the series was 55.95 years; it was 60, 3 years in Jean Baptiste [5]; 61 years in Bairi and Abrik [3] [4] about 3/4 of the patients were over 40 years in agreement with the rest of the literature [3] [4] [6]. The sample consisted of 24 men and 16 women with a sex ratio of 1.50 in favor of men. It was 2 at Bairi and Abrik [3] [4]. HTA, tobacco and diabetes were the main risk factors represented in accordance with the literature. Blood pressure was impregnable in 62.50% of patients, heart noises were deafened in 97.50% and tachycardia in 90% of cases. These signs show a low systolic ejection volume and therefore poor myocardial performance. There was oliguria in 75% of patients, agitation in 52.50% and impaired consciousness in 20%, these manifestations are linked to low heart rate with decreased glomerular filtration and cerebral hypoperfusion. Heart rate was most often sinus in 80%, atrial fibrillation was the dominant rhythm disorder (15%) this result is consistent with that of Bairi [3]. Electrical abnormalities related to coronary ischemia were in the majority 55% indicating the high frequency of coronary artery disease among etiology. In agreement with Bairi [3] and Sylvain [6], the majority of patients had a fraction of altered ejection (75%) evidence of advanced myocardial suffering. In our series hyper creatinemia was the most common biological abnormality (65%) this could be explained by functional kidney failure following low heart rate. In agreement with the rest of the literature [3] [4] [7] ischemic heart disease was the dominant etiology (57.50%) responsible for an alteration of contraction and myocardial relaxation with decreased systolic ejection volume. Its high fre-

quency could be explained by the prevalence of ischemic factors such as HTA, Tobacco and Diabetes. All nosological groups were represented in women in addition to peri partum cardiomyopathy which occupied 12.50% of etiologies. The occurrence of a state of shock in peri partum heart disease would be related to diagnostic delay and management. In the study, hospital mortality was 60% with a lethality of 79.16% in men and 31.25% in women. This result is consistent with the rest of the literature [1] [3] [4]. The deadliest etiologies were the chronic pulmonary heart and pulmonary embolism with frequencies at 100% and 87.50% respectively.

5. Conclusion

Cardiogenic shock is an infrequent condition with a high mortality of a prognosis. Ischemic heart disease is the most common etiology of the disease.

Conflicts of Interest

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

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