

# Peripartum Cardiomyopathy in the Cardiology Department of the CHU Point G

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## Abstract

**Objective:** This work aimed to evaluate the epidemiological clinical aspects and evolutionary aspects of peri partum cardiomyopathy (PPCM) in the cardiology department of the CHU Point G. **Materials and Methods:** This was a descriptive cross-sectional study from 01 January 2019 to 31 December 2019, including all patients admitted for heart failure during this period. **Results:** The study involved 40 patients out of 1187 admissions, a hospital prevalence of PPCM was 3.36%. The average age was 26 years plus or minus 7 years with extremes of 16 years and 38 years. The age group between 16 and 20 years was the most represented with 32.5% of cases. Housewives were in the majority with 87.6%; residing in rural areas 62.5%, with a low socio-economic standard of living 32.5% of cases. Multiparous in our context were dominant 42.5%, followed by pauci pares and primiparous with 32.5% and 25% frequency respectively. All our patients, 100% had their first symptom after childbirth, functional signs were dominated by dyspnea of effort present in 100% of patients, followed cough (40%) and chest pain (27.5%). On physical examination there was Tachycardia in 82.5%, Galop B3 (45%) and auscultatory arrhythmia in 5%. Signs of pulmonary condensation (82.5%) and pleural fluid effusion (25%). Hepatomegaly was present in 72.5% of patients. It was overall heart failure in 72.5% of cases. On the electrocardiogram there was sinus tachycardia (75%) and atrial fibrillation arrhythmia (5%). On cardiac Doppler ultrasound the left ventricle was dilated with a low systolic ejection fraction in 100% of patients, the four cavities were dilated in 32.5%, a left in-

traventricular thrombus in 7.5% of cases and a pericardial fluid effusion in 5% of cases. Biology noted anemia in 22.5% of patients. Treatment was classic for heart failure. The course was punctuated by complications in 42.5% of cases, such as thromboembolic disease (22.5%), ischemic stroke (12.5%), complete arrhythmia by atrial fibrillation (ACFA 5%) and cardiogenic shock (2.5%). Hospital mortality was 7.5% with 67% of deaths observed in the 16 - 22 age group. **Conclusion:** PPCM is a common sub-Saharan pathology, low socioeconomic status, young age and multiparity were factors dominant in our context.

## Keywords

Cardiomyopathy, Peri Partum, Epidemiology, Clinic, Evolution

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## 1. Introduction

Peripartum cardiomyopathy (PPCM), commonly referred to as Meadows' heart disease, is a primary cardiomyopathy responsible for congestive heart failure that occurs in the last month of pregnancy or the first five months of postpartum without further etiology of heart failure. The diagnosis is carried by the presence of cardiographic ultrasound signs attesting to left ventricular dysfunction, with LVEF < 45% and/or a shortening fraction < 30% and/or cavitory dilation with a left ventricular tele diastolic diameter > 2.7 cm/m<sup>2</sup> of body surface area with no other obvious cause [1]. PPCM accounts for minus 1% of pregnancy-related cardiovascular problems in developed countries [2] [3]. Its frequency is higher in sub-Saharan Africa than in regions of the world [2] [4], it accounted for 9.9% of cardiovascular diseases in 2016 according to a study conducted in the hospital environment of Parakou [5]. In Mali, it accounted for 11.4% of heart failure in cardiology at CHU G Touré (2000-2001) [6] and 22.3% of dilated cardiomyopathies in cardiology at CHU Point G in 2013 [7]. A polyfactorial origin has been considered by several authors [4] [8]. The evolution of this condition can be towards complete healing that can allow another subsequent conception [7] [9] [10]. This pathology is given its high frequency and morbidity, the absence of known etiology and the multiplicity of favoring factors make the interest of this work which aimed to study the epidemiological, clinical, and evolutionary aspects of peri partum cardiomyopathy in the cardiology department of the CHU Point G.

## 2. Materials and Methods

This was a prospective cross-sectional study spread from 01 January 2019 to 31 December 2019.

The inclusion criteria were all patients hospitalized in the ward for heart failure syndrome installed in the last month of pregnancy or five months after delivery with cardiac ultrasound signs.

The following were excluded:

- Parturient with subsequent underlying heart disease
- Heart failure outside of pregnancy
- Patients without cardiac ultrasound

The diagnosis was made by cardiac ultrasound highlighting a left ventricular dysfunction with an LVEF less than 45% and or a shortening fraction of less than 30%, and/or left ventricular cavitory dilation with a tele diastolic diameter (DVTD) to greater than 2.7 cm/m<sup>2</sup> of body surface without any other explanatory cause.

#### **Data collection**

Patients were recruited from hospitalization records with socio-demographic, clinical, paraclinical (biological, electrical, ultrasound), therapeutic and evolutionary parameters. The analysis and data entry were done by Microsoft Word 2010, IBM SPSS version 21 software. The statistical tests were the Khi 2 and the Fischer test with the statistical probability threshold at 5%. The consent of all patients was sought.

### **3. Results**

During the study period on 1187 patients admitted, 40 were admitted for CMPP, a hospital prevalence of 3.36%. The average age in the series was 26 years plus or minus 7 years with extremes of 16 years and 38 years. The modal class was 16 to 22 years with 32.5% of cases (**Table 1**). Housewives were in the majority with 87.6%; residing in rural areas 62.5% (**Table 2**), and an average socio-economic standard of living in 65% of cases and low in 32.5% of cases (low monthly income below Mali's SMIG: 40,000 FCFA, 1 euro = 655 FCFA). Multiparous people were in the majority 42.5% of cases, followed by pauci pares and primiparous people with 32.5% and 25% of cases respectively (**Table 3**). All our patients, 100% had their first symptom after childbirth, functional signs were dominated by exercise dyspnea of effort present in 100% of patients, followed cough (40%) and chest pain (27.5%). On physical examination, there was Tachycardia in 82.5%, Galop B3 (45%) and auscultatory arrhythmia in 5%. Signs of pulmonary condensation (82.5%) and pleural fluid effusion (25%). Hepatomegaly was present in 72.5% of patients. It was overall heart failure in 72.5% of cases. On the electrocardiogram there was sinus tachycardia (75%) and atrial fibrillation arrhythmia (5%). On cardiac Doppler ultrasound the left ventricle was dilated with a low systolic ejection fraction in 100% of patients, the four cavities were dilated in 32.5%, a left intraventricular thrombus in 7.5% of cases and a pericardial fluid effusion in 5% of cases. Biology noted anemia in 22.5% of patients. Treatment was classic for heart failure, the handle diuretic (100%), ace inhibitor (100%), spironolactone (60%), digitalis (5%), B blocker (80%) and dobutamine (2.5%). Complications were noted in 42.5% of cases, such as thromboembolic disease (22.5%), ischemic stroke (12.5%), complete arrhythmia by ACFA atrial fibrillation (5%) and cardiogenic shock (2.5%) (**Table 4**). The average hospital stay was

**Table 1.** Distribution of patients by age group.

Age group (years)	Staff	Percentage
16 - 22	13	32.5
23 - 28	9	22.5
29 - 34	11	27.5
35 - 40	7	17.5
Total	40	100

**Table 2.** Distribution of patients by occupation.

Profession	Staff	Percentage
Housewife	35	87.5
Merchant	03	7.5
Official	01	2.5
student	01	2.5
Total	40	100

**Table 3.** Distribution of patients by obstetric ATCD.

Obstetric history	Staff	Pourcentage
Multiparous	17	42.5
Pauci pare	13	32.5
Primipare	10	25
Total	40	100.0

**Table 4.** Distribution of patients by hospital evolution.

Evolution	Staff	Pourcentage
Complication		
Pulmonary embolism	9	22.5
Ischemic stroke	5	12.5
ACFA	2	5.0
Cardiogenic shock	1	2.5
Favorable	20	50
Death	03	7.5
Total	40	100

15 days plus or minus 6 days. Hospital mortality was 7.5% and 67% of deaths were observed in the 16 - 22 age group.

#### 4. Discussions and Comments

Limitations of the study include:

The high cost of hospitalization in the cardiology department.

Insufficient collaboration with the maternity ward during recruitment.

And the small sample size.

During the study period, we collected 40 patients meeting the inclusion criteria in a population of 1187 patients, a hospital frequency of 3.36%. This denotes the high index of this condition in our country.

Our prevalence was lower than 11.4% of COULIBALY A [6] in Mali and 12.8% of ADJAGBA in Benin [11]. This could be explained by the difference in the size of our samples and the increase in the number of cardiovascular disease treatment centers in Bamako. The extreme ages were 16 and 38 with an average of  $26 \pm 7$ . This is close to the average age found by DIARRA A [12] in Mali and FERRIERE [13] in France which was 29 years old. Pio M *et al.* [14] in Togo found an average age of 31 years. These results do not allow us to define a preferred age of peri partum heart disease. The age group from 16 to 22 years was the most represented with 32.5% of cases, This could be explained by the phenomenon of early marriage. In our study, the affected women met the following profile: Black African women, living in rural areas, with a low income, respectively 100%, 62.5%, 65% of cases. This is consistent with the literature [5] [15]. The majority of patients were housewives (87.5%); this could explain the high frequency of physical work in these patients that can promote the occurrence of this pathology [7]. Multiparity was dominant 42.5% of cases, same found in DEMAKIS [16] in the United States 71% of cases. All patients had shown the first signs of CI in the postpartum period, 100% with extremes ranging from day 7 to month 5. This figure is higher than the 87% of DIARRA A [12] in Mali and the 78% of LAMPER (France) [17]. These results testify to the frequency of this condition in the postpartum. Complications were dominated by thromboembolic events such as pulmonary embolism and AVCI with 22.5% and 12.5% of cases respectively, ACFA was present in 5% of cases and cardiogenic shock 2.5% of cases; testifying to the significant impairment of the contractile function of the myocardium and the delay in the diagnosis of the disease. The course was favorable without complications in half of the patients 50% of the cases; hospital mortality was 7.5% of cases ( $n = 3$ ), compared to 1.43% in COULIBALY B [18] in Mali and 15.3% of cases in FET JD in Haiti [19]. This could be explained by the fact that most of the patients were seen in the late stage of their disease. The factors of poor prognosis in our study were: young age with no statistically significant link and multiparity. Unlike the literature, it is high age and multiparity that are the factors of poor prognosis. This could be explained by the fact that three quarters of our patients were under the age of 34. The majority of deceased patients were in the 16 - 22 age group. COULIBALY B [18] in Mali had found high mortality in the age group from 25 to 34 years. However, it should be noted that the low numbers did not make the statistical test performed powerful, which did not make it possible to verify any correlation between the prognostic variables. Two out of three patients who died had a low socioeconomic status of

67%, compared to 100% of cases of death in patients with low socioeconomic status in the COULIBALY B study [6], performing physical labor during pregnancy. However, there is no statistically significant link between low socioeconomic status, physical labour during pregnancy and death ( $P = 0.30$ ).

## 5. Conclusion

CMPP is a common sub-Saharan pathology, low socioeconomic status, young age and multiparity were dominant factors in our context.

## Recommendations

The occurrence of a CMPP is a real social drama that can force to intervene on the maternity of a woman. The absence of a formal etiology means that our recommendations arise in terms of awareness and research.

### Sensitization:

#### At the level of patients and their parents:

- Consult as much as possible in health facilities.
- Regularly follow the prenatal consultation.
- Use contraceptive methods or consider scheduled pregnancies.

#### At the level of socio-health personnel:

- Refer to specialists any woman with postpartum IC symptoms;
- Organize information-education-communication campaigns for populations
- Strengthen the multidisciplinary relationship.

#### At the level of policy makers:

- Improvement of the socio-economic conditions of pregnant women.
- Strengthen accessibility to care.

### Research:

- We consider it necessary to continue research at the national level and in order to identify the characteristics of this disease.

## Conflicts of Interest

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

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