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ORIGINAL ARTICLE

Pregnancy-Associated Peripartum Cardiomyopathy: Incidence and Clinical Outcomes in Fetomaternal Medicine Department, BMU

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Abstract

Background: *Peripartum cardiomyopathy (PPCM) is a rare but potentially fatal form of heart failure associated with pregnancy, most commonly presenting in late gestation or the early postpartum period. Limited data are available from low- and middle-income countries regarding its burden and outcomes. This study describes the incidence, clinical characteristics, and in-hospital maternal and neonatal outcomes of PPCM managed at Bangladesh Medical University.*

Methods: *This observational study was conducted in the Department of Fetomaternal Medicine, Bangladesh Medical University (BMU), Dhaka, between January 2023 and January 2024. A total of 35 women diagnosed with PPCM based on echocardiographic evidence of left ventricular systolic dysfunction without prior structural heart disease were included. Demographic variables, clinical presentation, echocardiographic findings, and in-hospital outcomes were analyzed. No post-discharge follow-up was performed.*

Results: *The mean maternal age was 29.1 ± 4.9 years, with 60% multiparous women. PPCM was diagnosed postpartum in 65.7% of cases. Mean left ventricular ejection fraction at diagnosis was 31.2 ± 7.9%. Acute heart failure occurred in 60% of patients, and maternal mortality was 8.6%. Preterm birth and low birth weight were observed in 28.6% and 25.7% of neonates, respectively.*

Conclusion: *Peripartum cardiomyopathy remains a serious obstetric-cardiac condition associated with substantial maternal and neonatal risk. Early recognition and multidisciplinary in-hospital management are essential to improve outcomes in resource-limited settings.*

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Introduction

Peripartum cardiomyopathy is a pregnancy-associated cardiomyopathy characterized by the development of systolic heart failure toward the end of pregnancy or within several months following delivery.[1,2] Although uncommon, PPCM contributes disproportionately to maternal morbidity and mortality worldwide.[3]

Physiological cardiovascular adaptations of pregnancy—including increased plasma volume, cardiac output, and hormonal changes—may unmask latent myocardial vulnerability in susceptible individuals.[4,5] The incidence of PPCM varies widely, with higher rates reported in South Asia and sub-Saharan Africa.[6,7]

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Multiple mechanisms have been proposed in the pathogenesis of PPCM, including oxidative stress, angiogenic imbalance, inflammatory activation, and hormonal cleavage products such as prolactin fragments.[8-10] Emerging evidence also suggests a genetic predisposition, with pathogenic variants in cardiomyopathy-associated genes (e.g., *TTN*, *LMNA*, *MYH7*) identified in subsets of affected women [11–13]. Although genetic testing was not performed in the present study, theoretical genetic susceptibility may explain phenotypic variability among patients and represents an area of interest for future research.

Data from Bangladesh regarding PPCM remain scarce. This study aims to describe the clinical profile and immediate pregnancy outcomes of women with PPCM managed at a tertiary fetomaternal care center.

Materials and Methods

Study Design and Setting

A hospital-based observational study was carried out at the Department of Fetomaternal Medicine, Bangladesh Medical University (BMU), Dhaka, from January 2023 to January 2024.

Study Population

Pregnant or postpartum women diagnosed with PPCM during hospital admission were included. PPCM was defined as newly detected left ventricular systolic dysfunction (LVEF <45%) occurring toward the end of pregnancy or postpartum in the absence of prior cardiac disease.[2]

Data Collection

Clinical records were reviewed to obtain demographic data, obstetric history, presenting symptoms, echocardiographic parameters, and in-hospital maternal and neonatal outcomes. Only outcomes occurring during the index hospitalization were analyzed.

Ethical Considerations

This study involved retrospective analysis of routinely collected clinical data. No additional investigations or interventions were performed. Patient anonymity was strictly maintained.

Statistical Analysis

Data were analyzed using SPSS version 22. Continuous variables are presented as mean ± standard deviation, and categorical variables as frequency and percentage.

Results

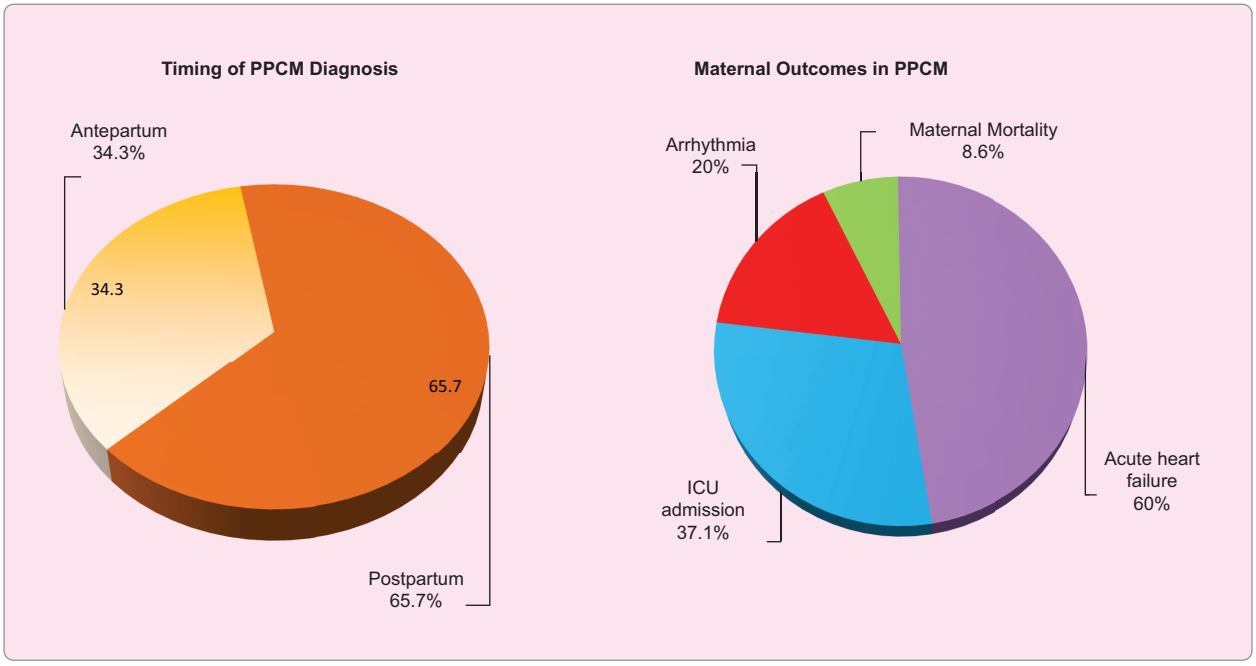

Figure 1: *Outcomes of PPCM*

Maternal Characteristics

Table-I

Maternal Demographic and Obstetric Characteristics (n = 35)

Variable	Value
Mean age (years)	29.1 ± 4.9
Age range (years)	21–38
Multiparous women	21 (60.0%)
Primiparous women	14 (40.0%)
Diagnosis during pregnancy	12 (34.3%)
Diagnosis in postpartum period	23 (65.7%)
Gestational age at presentation (weeks)	34.2 ± 3.6
Clinical Presentation	

Table-II

Clinical Presentation at Admission

Clinical feature	Number (%)
Dyspnea (NYHA III–IV)	29 (82.9%)
Orthopnea / PND	18 (51.4%)
Peripheral edema	22 (62.9%)
Palpitations	11 (31.4%)
Pulmonary crepitations	24 (68.6%)
Cardiogenic shock	4 (11.4%)

Echocardiographic Findings

Table-III

Echocardiographic Findings at Diagnosis

Parameter	Mean ± SD / n (%)
Mean LVEF (%)	31.2 ± 7.9
LVEF < 30%	14 (40.0%)
Dilated left ventricle	26 (74.3%)
Global hypokinesia	30 (85.7%)
Functional mitral regurgitation	17 (48.6%)
Intracardiac thrombus	2 (5.7%)
In-Hospital Maternal Outcomes	

Table-IV

In-Hospital Maternal Outcomes

Outcome	Number (%)
Acute heart failure	21 (60.0%)
Arrhythmia	7 (20.0%)
ICU admission	13 (37.1%)
Mechanical ventilation	5 (14.3%)
Maternal mortality	3 (8.6%)
Neonatal Outcomes	

Table-V

Pregnancy and Neonatal Outcomes

Outcome	Number (%)
Preterm delivery (<37 weeks)	10 (28.6%)
Cesarean section	19 (54.3%)
Low birth weight (<2.5 kg)	9 (25.7%)
NICU admission	8 (22.9%)
Neonatal mortality	2 (5.7%)

Discussion:

This study highlights the ongoing clinical burden of PPCM at a tertiary fetomaternal care center in Bangladesh. Most patients presented with advanced symptoms and significant ventricular dysfunction, similar to reports from other low-resource regions.[14–16]

The observed maternal mortality rate underscores the severity of PPCM when diagnosis is delayed or presentation is advanced.[17] Adverse neonatal outcomes were also frequent, likely reflecting compromised maternal cardiac output and the need for early delivery.[18,19]

Although genetic testing was not undertaken, accumulating literature supports a heritable component in PPCM pathogenesis.[11,12,20] Variants affecting sarcomeric and cytoskeletal proteins may predispose certain women to myocardial dysfunction under pregnancy-related stress. The inclusion of a biotechnology contributor in this study reflects this evolving theoretical framework and emphasizes the importance of future multidisciplinary research.

Conclusion:

In the department of fetomaternal medicine, BMU, peripartum cardiomyopathy represented an uncommon but clinically significant cause of pregnancy-associated heart failure, with 35 cases identified over a one-year period. The condition was predominantly diagnosed in the postpartum period and was characterized by severe left ventricular systolic dysfunction, with a mean ejection fraction of 31.2%. A high proportion of women developed acute heart failure (60%), required intensive care (37.1%), and experienced serious complications, resulting in an in-hospital maternal mortality rate of 8.6%. Pregnancy outcomes were also adversely affected, with more than one-quarter of deliveries occurring preterm and a substantial proportion of neonates having low birth weight or requiring NICU admission. These findings underscore that PPCM in this setting is associated with considerable maternal and neonatal morbidity and mortality. Early recognition, prompt echocardiographic evaluation, and

coordinated multidisciplinary management are essential to improve short-term outcomes, particularly in resource-limited environments.

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