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Original research article

Postpartum cardiomyopathy: An observational prospective study at a tertiary care centre

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Abstract

Introduction: Heart failure in peripartum period was first described in 1849, but it was the work of Demakis and his colleagues in 1971 (1) syndrome was defined for the first time as symptomatic heart failure presenting in the last month of pregnancy and up to 5 months postpartum (2) The diagnosis includes three criteria based on the 2010 ESC Working Group definition.

Aims and Objectives: The aim of this study was to define the causes that lead to peripartum heart failure in North Indian population.

Methods: This was a longitudinal study carried out in referred hospital SMS Jaipur in North India. Patient referred for cardiac evaluation from January 2020 to December 2021 were included in the study.

Results: Predominantly acute onset breathlessness and pedal edema were noted in all cases. 3 (13.04%) patients had hypotension (SBP<100mmHg) and 7 (30.4%) patients had PIH. Of the total 23 patients, 3 died within first 6 months and rest 2 succum to PPCM before the 12 months follow up.

Conclusion:PPCM is a serious condition, although rare has a high mortality rate. Pre-eclampsia is a strong risk factor for PPCM as seen in our study.

Keywords: Prospective comparative study, hamstring graft, femoral tunnel widening, ACL.

Introduction

Peripartum cardiomyopathy is a rare but serious disease entity of late pregnancy and early puerperium. Heart failure in peripartum period was first described in 1849, but it was the work of Demakis and his colleagues in 1971 [1] syndrome was defined for the first time as symptomatic heart failure presenting in the last month of pregnancy and up to 5 months postpartum [2]. The diagnosis include three criteria based on the 2010 ESC Working Group definition which includes development of heart failure (HF) toward the end of pregnancy or in the months following delivery, absence of another identifiable cause of HFand left ventricular (LV) systolic dysfunction with an LV ejection fraction (LVEF) generally< 45%[3].Global estimates of the incidence of PPCM may vary by regions, with reports as high as 1 in 100 deliveries in Nigeria [4] and Pooled analysis of seven Indian studies on PPCM, including 221 patients to study the incidence of PPCM in the Indian population was 1 in 1340 live births [5].

Methods

This was a longitudinal study carried out in referred hospital SMS Jaipur in North India. Patient referred for cardiac evaluation from January 2020 to December 2021 were included in the study.

Inclusion criteria

i) Newly diagnosed PPCM before commencement of medical treatment.
ii) Onset of HF symptoms between last few months of pregnancy and first 5 months postpartum.
iii) Pre-standing between last few of months of pregnancy and first 5 months postpartum.
iv) Written informed consent.

According to the recommendation of HF Association of the European Society of cardiology working group of PPCM and LV systolic dysfunction was defined as the Left Ventricular Ejection Fraction <50. The clinical and serial echocardiography evaluation was conducted and followed up at 1, 3, 6 months and 1 year.

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Results

A total of 6540 pregnant women were screened who were referred for cardiac evaluation, out of which 23 patients were diagnosed with PPCM that constituted 0.35%. The mean age at the time of diagnosis was 26+/- 2 years. In our study, 8 out of 23 (34.7%) cases presented antenatally. 15 (65.3%) cases presented postnatally.

Clinical signs and symptoms of acute heart failure were noted to a variable extent in all cases. Predominantly acute onset breathlessness and pedal edema were noted in all cases. 3 (13.04%) patients had hypotension (SBP<100mmHg) and 7 (30.4%) patients had PIH. This add to the evidence that pre-eclampsia is a substantial risk factor for PPCM. PPCM was common in overweight patients with mean BMI of cases studied being 28.6. Of the total 23 patients, 3 died within first 6 months and rest 2 succum to PPCM before the 12 months follow up. The baseline characteristics of 18 survivors were similar to the deceased.

Sociodemographic profile

Age Group	
<20yrs	3
20-30yrs	14
>30yrs	6

Parity	
Primigravida	15
Multigravida	8

Order of Gestation	
Singleton	21
Twin	2

BMI	
Normal	6
Overweight	15
Obese	2

NYHA Guidelines for Breathlessness	
Grade I	2
Grade II	9
Grade III	12

Presenting Complication	
CHF	23 (100%)
Arrythmias	3(13.04%)

LV & RV Improvement	
LVEF improvement after 1 year	13
RV function improvement after 1 year	18

Discussion

The incidence of peripartum cardiomyopathy (PPCMP) varies widely across various geographic regions of world from 1:15,000 to 1:100 deliveries [6]. There is very little literature from Asian countries. In a study from south India the incidence of PPCMP has been reported at 1 case per 1374 live births [7]. The highest incidence of PPCMP occur in Nigeria (one case per 102 deliveries) [8].

In a study conducted by viney P major risk factor for the development of postpartum cardiomyopathy were multiparity and increased maternal age [7].

Our study, however, noted that PPCM was common in young Primigravida with mean age being 26 years. Multiparity and increasing age are not as critical risk factors in the Haitian population compared with western population, as studied by Fett *et al*.,[9]. According to Sliwa *et al*., PPCM is more common in (24-37%) young primigravida and white patients contrary to older and black women. Preeclampsia (30.4%) a strong risk factor for PPCM in our study, and this is similar with Agarwal *et al*., A meta-analysis of 22 studies published in 2013 discovered a 22% prevalence of preeclampsia in women with PPCM It is four times more than the global prevalence. Worldwide mortality of about 7 to 50% was noted in postpartum cardiomyopathy in hours. Study mortality rate was 21.7% which was still high as compare to developed world where mortality rate was only 4%.

Fetal mortality. This is largely encouraging considering that maternal mortality rates of PPCM are known to vary between 7% and 50% worldwide[15].However, the mortality is still considerably higher than

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developed countries where rates of mortality are comparatively low.

Conclusion

PPCM is more common in young primigravida and white patients with higher rate of mortality in developing countries. Pre-eclampsia is a strong risk factor for PPCM as seen in our study. The sample size in our study was small. However a study with larger sample size should be conducted.

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