Original Article

Feto maternal outcome in patients with peripartum cardiomyopathy in a tertiary care centre in Kashmir

Samina Ashraf, Asima Afzal, Zarnain Abid

Abstract:

Background: Peripartum cardiomyopathy (PPCM) or postpartum cardiomyopathy is an uncommon form of heart failure that occurs during the last month of pregnancy or up to 5 months postpartum. The exact incidence is uncertain perhaps due to the misdiagnosis of this entity. The aim of the study was to understand the clinical profile, risk factors and management of the patients with PPCM and their fetomaternal outcome.

Methods: This prospective observational study was conducted in the Department of Obstetrics and Gyneacology Government Medical College Srinagar over a period of 30 months between October 2019 to April 2022.Thestudyincludedwomenwhohadfeatures of heart failure in the last 6 weeks of pregnancy or 5 months postpartum, with absence of other identifiable causes of heart failure or absence of features of heart failure prior to the last month of pregnancy and absence of left ventricular dysfunction prior to this.

Results: Most of our patients were multigravid as with a mean age of 31years.14 out of 22 cases presented with complaints of dyspnea. 63% of patients had ejection fraction between 26-35%. Hypertension was present as a risk factor in 45.4% cases. Maternal Mortality was 5out of 22 patients and Neonatal Mortality was 2 out of 22 cases.

Conclusion: Our prospective cohort study concluded that the maternal outcome was poor in cases with decreased ejection fraction and severe symptoms. Early identification and management of the disease is a crucial step for improvising the feto-maternal outcome. An integral slant comprising of the cardiologist, intensivist, obstetrician and perinatologist is required for a successful fetomaternal outcome.

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Introduction:

Peripartum cardiomyopathy (PPCM) or postpartum cardiomyopathy is an uncommon form of heart failure that occur during the last month of pregnancy or upto 5months postpartum. The exact incidence is uncertain perhaps due to the misdiagnosis of this entity. The occurrences pectrum is likely to represent the diverse population dynamics, description and misrepresentation arising from its lack of understanding. It usually is a diagnosis of exclusion. PPCM has been postulated to be a multifactorial disease. To fully define PPCM, we should at least identify one of the following factors using echocardiography: left ventricular end diastolic area size greater than 2.7cm/m2 of BSA, ejection fraction <45% or a reduced fractional shortening of less than 30%.[1]

Risk factors include pre-eclampsia, eclampsia, diabetes mellitus, smoking, hypertension, multigestational pregnancy and older maternal age[2] PPCM is a disease with diverse manifestations and to someextent unexplored pathogenesis. The deleterious effects of this disease usually reverse within one year after delivery as compared to other forms of cardiomyopathy [3]. The outcome of PPCM has been shown to be strongly associated with race and ethinicity. The most feared complication is sudden cardiac arrest due to ventricular tachyarrythmia. Even when LVEF recovers, there is an elevated risk for recurrent PPCM in future pregnancies.

Despite increased awareness of the disease over last few years, there are still many stones unturned for the exact understanding of its epidemiology, risk factors, pathophysiology and management.

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Keywords
peripartum cardiomyopathy, heart failure, echocardiogram, pregnancy

Material and Methods

This prospective observational study was conducted in the Department of Obstetrics and Gynaecology, Lalla Ded hospital, associated hospital of Government Medical College Srinagar over a period of 30 months between October 2019 to April 2022. The study included women who had features of heart failure in the last 6 weeks of pregnancy or 5 months postpartum, with absence of other identifiable causes of heart failure or absence of features of heart failure prior to the last month of pregnancy and absence of left ventricular dysfunction prior to this. Features of peripartum cardiomyopathy on ECHO were defined as LVEF <45%, LV fractional shortening<30% or both and LV end diastolic dimension >2.7 cm/m2 BSA.

Baseline data recorded age, parity, gestational age, type of lesion on echocardiography, time and duration of disease, risk factors, presenting features, treatment received, maternal complications, mode of delivery and neonatal outcome. All echocardiograms were performed in the hospital by trained cardiologists. All the patients were under multidisciplinary care of obstetrician, intensive care specialist and cardiologists.

Results

Of the 55, 101 delivered patients during our study period, 22women met the criterion for the diagnosis of peripartum cardiomyopathy.

Mean age at the time of presentation was31years.

8 out of 22 patients were primigravida (36.3%) and the rest were multigravida.

The time of onset of the symptoms of peripartum cardiomyopathy was between 37 to 40 weeks in 77.2 % patients followed by 22.7 % within a week. During our study period we did not received any patient with features of peripartum cardiomyopathy beyond 1st week of delivery.

TABLE1

Age	No. Of Patients(n=22)
26-28	5
29-32	13
>32	4
Mean Age	31Years

TABLE2

Parity	No.Of Patients(n=22)	Percentage
Primigravida	8	36.3
Multigravida	14	63.7

TABLE3

Onset	No. Of Patients (n=22)	Percentage
37-42Weeks	17	77.2
1WeekPost-Partum	5	22.8

The predominant symptoms at presentation were dyspnea, in 14 out of 22 cases (63.6%). Majority cases were of NYHA Grade III (57.14) followed by Grade II in 28.5%.

TABLE4

NYHA Grading	No. Of Patients(n=22)	Percentage
1	1	7.14
2	4	28.5
3	8	57.14
4	1	7.14

The associated risk factors present in our study for the development of PPCM were hypertensionduring pregnancy in 10cases, anemia in4 cases and GDM in1 patient.

TABLE5

Risk Factors	No.Of Patients(n=22)	Percentage
Hypertension	10	45.4
Anaemia	4	18.18
GDM	1	4.54

Majority of the cases had EF between ejection fraction between 26 – 35% (14 cases). While 5 cases had ejection fraction below 25% and 3 cases had ejection fraction between 36 to 45%. All cases had varying degree of mitral regurgitation. 9cases had tricuspid regurgitation.

TABLE6

Ejection Fraction	No. Of Patients(n=22)	Percentage
<25%	5	22.7
26-35%	14	63.63
36-45%	3	13.6
Mitral Regurgitation	22	100
Tricuspid Regurgitation	9	40.9

Women with PPCM were mostly delivered via caesarean section, 18 out of 22 in our study. The indication for caesarean section was often a maternal cardiovascular instability or pre- eclampsia.ICU admission was required in all the cases. Maternal mortality was 5 out of 22 patients.

TABLE7

	No. Of Patients(n=22)	Percentage
VaginalDelivery	4	18.18
Caesarean Section	18	81.81
ICUAdmission	22	100
MaternalMortality	5	22.7

Neonatal mortality was 2 out of total 22 cases.

Discussion

Peripartum cardiomyopathy is a rare form of congestive heart failure of unknown etiology occurring between the last month of pregnancy and 5 months post delivery with no determinable cause. Its incidence and prevalence is highly variable across different geographical regions and is also race determinant. It has a wide clinical spectrum ranging from complete recovery to death. Peripartum cardiomyopathy is diagnosis of exclusion. Several unconfirmed etiologies have been proposed like viral myocarditis, nutritional deficiencies, autoimmunity, micro chimerism, hemodynamic stresses, vascular dysfunction, harmonal insults and underlying genetics[4]. PPCM has also been speculated to been mediated by a 16 kDa fragment of prolactin [5].

In the present study the incidence of PPC Min pregnant woman was 22 per 51,732 live births. Or 0.4 per 1000 live births

Elkayametal had previously reported a higher incidence of PPC Minwoman aged 30 years or more [6]. Our cohort showed showed similar results with the mean age of our patients being 31 years. Multigravida formed the majority of our patients, 63.7%. This was however in contrast to the study of Singh S et al [7] and Aruja et al[8]Reported a majority incidence in the primigravidas.

Most patients had onset of symptoms between 37 and 40 weeks of gestation. Similar observation was made by Singh et al [7].

The most common symptom at presentation was dyspnea (NYHA 3 >2) in 63.6% cases. Another similar Indian study by S Singh et al [7] also reported dyspnea to be the predominant symptom. The predominant risk factor identified in our study was hypertension. This is in accordance with the results of Singh S et al (7) but contrary to those of Aditya John Bimietal[9]who reported no significant relation.

Patients with PPCM should be dealt at multidisciplinary tertiary care centres for the better outcome of the mother and the baby. Pregnancy is usually terminated in maternal interest. Although vaginal delivery is the preferable mode of termination, in our study 81% cases were delivered via caesarean section.This was similar to the studies of Aditya John's Binuet al [9] and Singh S et al [7].

All the patients were managed in the ICU following the confirmation of diagnosis and were taken care by the intensive care specialist, cardiologist and obstetricians. In our study maternal mortality was 22.7%. Most studies have shown mortality ranging from 18 to 56% [10-12]. Neonatal mortality in our study was 2 out of 22 cases which show a favourable result with regard to the fetal outcome. Similar results with regards to the fetal outcome. Similar results were demonstrated by Singh S et al [7] Favourable fetal outcome can also be attributed to the departmental neonatology specialists and a well-equipped NICU.

The sign and symptoms of PPCM like dyspnea, orthopnea, pedal edema overlap with the expected physiological changes of pregnancy. As such a high index of suspicion is required while making the diagnosis of PPCM which is aided by the echocardiography findings.

Treatment usually is supportive and directed towards the management of the heart failure symptoms [13]. Standard heart failure therapy is used to optimize the patient's volume status. Beta blockers and ACE inhibitors are the most commonly used drugs [14]. Novel anti heart failure medications have been reported to improve heart failure symptoms in pregnancy related cardiomyopathies[15].Bromocriptine which decreases the effect of

Prolacti non cardiacmyocytes has been associated with better outcomes[16].

Conclusion

Our prospective cohort study concluded that the maternal outcome was poor in cases with decreased ejection fraction and severe symptoms. Hypertension was found to be an important contributing factor. Early identification and management of the disease is a crucial step for improvising the feto-maternal outcome. An integral slant comprising of the cardiologist, intensivist, obstetrician and perinatologist is required for a successful fetomaternal outcome.

References

1. Hilfiker-KleinerD,KaminskiK,PodewskiE,BondaT,SchaeferA,SliwaK,etal.A cathepsin D-cleaved 16 kDa form of prolactin mediates postpartum cardiomyopathy. Cell 2007; 128(3):589–600. [PubMed]
2. Davis, M.B.; Arany, Z.; McNamara, D.M.; Goland, S.; Elkayam, U. Peripartum Cardiomyopathy:JACCState-of-the-ArtReview.J.Am.Coll.Cardiol.2020,75,207–221.[CrossRef]
3. Pearson GD, Veille JC, Rahimtoola S, Hsia J, Oakley CM, Hosenpud JD, et al. Peripartum cardiomyopathy: National Heart, Lung, and Blood Institute and Office of RareDiseases(NationalInstitutesofHealth)workshoprecommendationsandreview. JAMA 2000;283(9):1183–8. [PubMed]
4. ManolioTA,BaughmanKL,RodehefferR,PearsonTA,BristowJD,MichelsVV,et al. Prevalence and etiology of idiopathic dilated cardiomyopathy (summary of a National Heart, Lung, and Blood

Institute workshop). Am J Cardiol 1992;69 (17):1458–66. [PubMed]

5. BinuAJ,CherianKE,KapoorN,etal.Theheartofthe matter:cardiacmanifestations of endocrine disease. Indian J Endocr Metab 2017; 21: 919–925.
6. ElkayamU,AkhterMW,SinghH,etal.Pregnancy-associatedcardiomyopathy: clinical characteristics and a comparison between early and late presentation. Circulation 2005; 111: 2050–2055.
7. Singh S, Munikrishna M, Sheela SR. Feto-maternal outcome in patients with peripartumcardiomyopathy:a5-yearstudyinatertiarycarehospitalinKolardistrict, India. Int J Reprod Contracept Obstet Gynecol 2020; 9:1853-7.
8. BhaleraoA,GargR.Pregnancyoutcomeinperipartu mcardiomyopathy.InterJObstet Gynaecol Res. 2016; 8:38-49.
9. Peripartum Cardiomyopathy: An analysis of clinical profiles and outcomes from a tertiarycarecentreinsouthernIndiaAdityaJohnBin u1,SudhaJasmineRajan1,Swati Rathore2, Manisha Beck2, Annie Regi2, Viji Samuel Thomson3 and Sowmya Sathyendra
10. Binu A, Rajan S, Rathore S. Peripartum cardiomyopathy: an analysis of clinical profiles andoutcomesfromatertiarycarecentreinsouthernI ndia. SAGE.2019;1-6.
11. ElkayamU,PadminiP.Maternalandfetaloutcomes ofsubsequentpregnanciesin women with peripartum cardiomyopathy. N Engl J Med. 2011; 344:67-71.
12. VaniYJ,VemuA.Maternalandfetaloutcomeinwo menwithcardiacdisease -a retrospective study in tertiary care center. IOSR-JDMS. 2017; 16:50-3.
13. Lapaire O, Hosli I, Zanetti-Daellenbach R, Huang D, Jaeggi C, Gatfield-MergenthalerS,etal.Impactoffetal-maternal microchimerismonwomen'shealth–a review. J Matern Fetal Neonatal Med 2007;20(1):1–5. [PubMed]
14. VanSpaendonck-ZwartsKY,vanTintelenJP,vanVeldhuisenDJ,van derWerfR, Jongbloed JD, Paulus WJ, et al. Peripartum cardiomyopathy as a part of familial dilated cardiomyopathy. Circulation 2010;121(20):2169–75. [PubMed]
15. MoralesA,PainterT,LiR,SiegfriedJD,LiD,Norton N,HershbergerRE.Rare variant mutations in pregnancy-associated or peripartum cardiomyopathy.
16. Circulation2010;121(20):2176–82.[PMCfreearticle][PubMed]
17. LampertMB,LangRM.Peripartumcardiomyopath y.AmHeartJ 1995;130(4):860–70. [PubMed]