



Takotsubo Cardiomyopathy in Pregnancy: A Systematic Literature Review

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Abstract

Introduction – Literature was reviewed to ascertain precipitants, clinical features and natural history of Takotsubo cardiomyopathy (TCM) in pregnancy.

Methods - The search was conducted for case reports or series of TCM (2018 international TCM diagnostic criteria) in pregnancy, in PubMed, SCOPUS, Google Scholar and EMBASE, up till September 2018. Total of 351 studies were screened and 40 case reports on 42 patients were included.

Results – Reported patients had an average age of 31(±5) years and were mostly primigravida (66%). Onset of TCM was most frequent in the postpartum period (58%), at a median of 2.0 hours after delivery. Precipitating factor, identified in 56% of patients, involved either exposure to extrinsic catecholamine (31%) (tocolytic agent) or events associated with high intrinsic catecholamine levels. The later included complications such as post-partum haemorrhage (PPH) (16%) and abruption. The most common presentation was pulmonary edema with or without chest pain. The typical left ventricle apical involvement occurred in only 48% of patients. The cardiac recovery was quick (median of 10 days). Majority of patients (80%) required cardio-respiratory support in ICU. Despite cardiac arrest in 11% of patients, the maternal survival was 100%. The foetal mortality was 13%.

Discussion – TCM should be considered in differentials for acute cardio-respiratory deterioration after stressful event such PPH or after catecholamine drug. These patients should also be assessed for covert endocrine disorders. TCM carries excellent maternal prognosis but requires urgent invasive cardio-respiratory support in ICU.

Objectives

To conduct systematic literature review to ascertain precipitants, clinical features and natural history of TCM in pregnancy.

Methods

- TCM was defined based on 2018 international TCM diagnostic criteria.
- The search was conducted for case reports or series of TCM in pregnancy, in PubMed, SCOPUS, Google Scholar and EMBASE, up till September 2018.
- Search was limited to English literature. Snow-balling techniques were used to identify additional studies.
- Key words were used for TCM, antenatal, peripartum and post partum period and combined using various boolean Operators.
- Only peer reviewed publications and conference abstracts were included.

Results

507 studies
[PubMed(163), SCOPUS (89), EMBASE (99), Google Scholar (156)]

351 studies screened after removing duplicates

Studies excluded:
Review articles (36)
View points/expert opinion (28)
Other cardiomyopathy (297)
Echo features not described (33)
Non-pregnant population (186)

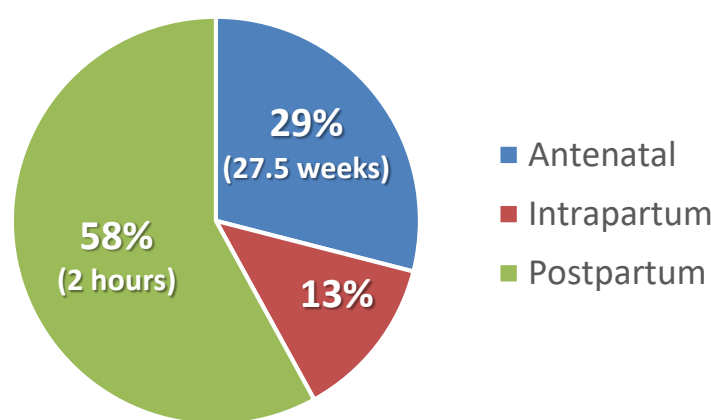
40 case reports on 42 patients were included

Demographics:

- Age 31(±5) years
- Primigravida (66%)
- No significant comorbidities
- Most common ethnicity – Japanese (28%)
- Delivery: Emergency LSCS (38%), Elective LSCS (28%), Vaginal delivery (34%).

Clinical features:

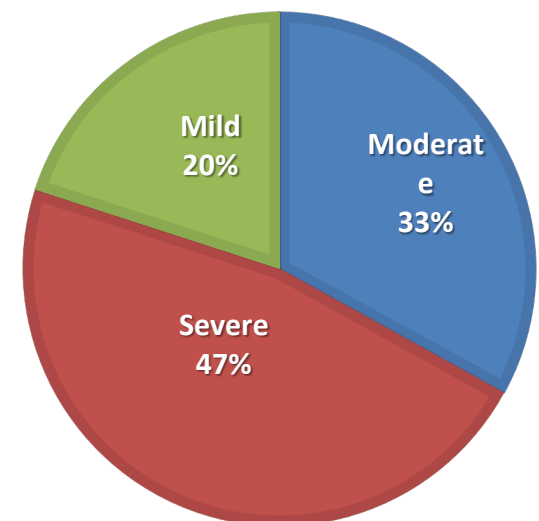
- Onset (median):



- **Precipitating factor**, identified in 56% of patients, involved either exposure to extrinsic catecholamine (31%) (tocolytic agent) or events associated with high intrinsic catecholamine levels. The later included complications such as post-partum haemorrhage (PPH) (16%) and abruption, or endocrine disorder (16%).
- **Presentation**: Most common presentation was acute onset shortness of breath with or without chest pain, due to pulmonary oedema evident on chest X-ray. Cardiac arrest in 11% of patients. Most patients were hypoxic (64%) and hypotensive (64%). Hypertension was present in 21% of patients.
- **Investigations**: All patients had echocardiography. Coronary angiogram was performed in 28% of patients.
- Mean (Stdev) reported EF on echo was 27% (13).

Results

SEVERITY OF LV DYSFUNCTION



MILD EF	MODERATE EF	SEVERE EF
40-49%	30-39%	<30%

Pattern of TCM	Prevalence in International Takotsubo Registry	Prevalence in obstetric cases studied
Apical	82%	54%
Basal*	2.2%	42%
Mid-ventricle	14.6%	4%
Focal	1.5%	0%

* Also known as inverted TCM

Outcomes:

- Maternal survival 100%
- Foetal survival 87%
- 80% patients required cardio-respiratory support in ICU
- Rapid recovery – Median time to normal echo was 8 days
- Variable follow-up of patients, but no recurrence reported.
- Pheochromocytoma was discovered in 8% of cases

Conclusions

TCM should be considered in differentials for acute cardio-respiratory deterioration after stressful event such PPH or after catecholamine drug. These patients should also be assessed for covert endocrine disorders. 'Inverted TCM' is relatively more frequent in Obstetric population. TCM carries excellent maternal prognosis but requires urgent invasive cardio-respiratory support in ICU.

References

1. Clinical Features and Outcomes of Takotsubo (Stress) Cardiomyopathy. N Engl J Med. 2015;373(10):929.
2. International Expert Consensus Document on Takotsubo Syndrome (Part I): Clinical Characteristics, Diagnostic Criteria, and Pathophysiology. European Heart Journal, Volume 39, Issue 22, 07 June 2018, Pages 2032–2046