Dyspnoea in the Second Trimester
An Unexpected Diagnosis

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Common things occur commonly, but not always. Our case demonstrates that some clinical situations are not always as they seem. Point-of-care echocardiography by appropriately trained & skilled Emergency Physicians can distinguish similarly-appearing clinical conditions and effect a potentially life-saving change to treatment that otherwise may have missed the mark. Had this patient not been diagnosed early, outcomes could have been tragically different.
40y ♀ 21/40 Pregnant G4P2M1 with progressive breathlessness over 3 weeks  [NYHA I → III]
Smoker, Asthmatic (Rx Salmeterol/Fluticasone & Salbutamol)
↑ use of salbutamol with no relief. Holiday to Bali 2 weeks ago (returned 3/7 ago)
Exertional dyspnoea
Orthopnoea, PND
Bilateral leg swelling
Cough
20 week ultrasound: Normal fetus, excess amnion

ECG: SR with LBBB & Right axis deviation
Hb 126, Troponin-I <0.04, NT pro-BNP 1960

Diagnosis: Presumed **Pulmonary Embolism**
DDx: ?LRTI?, ?Heart Failure

**Point of Care Echocardiogram**
LV Dilated + Global Hypokinesia
Significant MR (>4ms⁻¹) - EPSS >1.2cm
RV grossly normal
IVC 2.5cm with minimal inspiratory collapse

**NEW DIAGNOSIS**
LV Failure (¿PACM?)
Our Patient...
Initial Management

- Frusemide, discussed with consultant cardiologist. Admitted under General Medicine overnight for transfer in the morning...

Formal Echocardiogram in the morning:

- LV: LVEF 21.8% (Fractional shortening 0.1). Severe systolic & diastolic dysfunction
- LA: Severely dilated (44mL/m²) RA: mildly dilated (32mL/m²)
- RV: Moderately dilated with moderate global impairment of systolic function
- MV: moderately severe functional MR - PASP 53mmHg (moderate pulmonary hypertension)

Impression: Left Ventricular Failure
Likely Pregnancy-Associated Cardiomyopathy (PACM)

Transferred to Tertiary Hospital with Advanced Heart Failure Service, with Complicated Obstetrics team from Tertiary Obstetric Hospital arranged to visit & review

Cardiology Management
- Frusemide, Hydralazine, Enoxaparin, Bisoprolol
  - Fluid restriction 1.5L daily
- Repeat echo after 3 days: EF 28%, PASP 61mmHg
  - Close follow up in clinic with regular echo

Obstetric Management
- Plan for Elective Caesarean delivery at 32 weeks gestation
Delivered 1 week earlier than planned due to foetal ascites. LVEF 13%
Caesarean delivery using spinal anaesthesia only
Tubal ligation performed

Male infant delivered clinically well.
(30 weeks & 6 days gestation)

1.5L intra-operative blood loss
→ Haemodynamic decompensation

Noradrenaline + Dobutamine
Syntocinon
ICU → CCU

Latest Follow up:
Mother & Baby doing well!
NYHA II at 1 month post-delivery
Weight (fluid) loss continuing
INR Therapeutic
Outpatient Cardiac MRI planned

Intra-operative echo
Torrential MR
LVEF 10%

Prognosis? Hopeful
We await the 6-month Echo & Cardiac MRI results
Heart failure associated with pregnancy was first described as a distinctive form of cardiomyopathy in 1937. Studies suggest Pregnancy-Associated Cardiomyopathy (PACM) to be the same disease process as Peripartum Cardiomyopathy (PPCM).

PACM is a rare clinical entity in which new dilated cardiomyopathy develops in pregnancy.

~13% of cases of ‘PPCM’ present outside traditional diagnostic time restrictions. These cases represent PACM.

Tertiary Cardiac & Obstetric combined management is ESSENTIAL

**PPCM Diagnostic Criteria**
- DCM in the last month of pregnancy, or within 5 months of delivery
- No other cause for DCM found
- No previous heart disease
- LVEF < 45%

**Risk Factors**
- Demographic: Age >30yrs, Black race
- Obstetric: Multiparity, Twin pregnancy, prior (pre-)eclampsia
- Historical: Hypertension
- Geographic: Developing country (up to 10x higher risk)

**Clinical Course**
- Rapid deterioration & death within days of Dx, OR;
- Potentially complete spontaneous recovery (spectrum)
- Mortality ranges from 9-30%
- 0-11% of cases have heart transplant.
- PACM v PPCM …
  - = earlier end to pregnancy (32 v 37 wks)
  - = lower birth weight (2238g v 3092g)

**Good Prognostic Factors**
- RAPID DIAGNOSIS!!!
- NYHA I or II at diagnosis, and at 6/12 post-partum
- LVEF >30% at diagnosis
- PACM has a better prognosis in general
- Hazard Ratio for death is 0.31 when compared with Idiopathic DCM (iDCM)
- Other forms of DCM have worse prognoses than iDCM

**Bad Prognostic Factors**
- Clinical: Delayed diagnosis, NYHA class III or IV, Cyanosis, Lower pulse pressure, Multiple comorbidities
- Echocardiographic: Left heart obstruction, LV thrombus, High PASP
- Demographic: Black ethnicity, Older age
- LVEF not normalised at 6 months post-partum
References


In Summary

- Pregnancy is a challenging clinical scenario where subtle changes to the milieu of normal symptoms can represent significant disease.
- Pregnancy-Associated Cardiomyopathy needs to be part of the workup for a pregnant patient whose breathlessness just isn’t quite right. The diagnosis is not always “pulmonary embolism” or “normal for pregnancy”!
- Early recognition of PACM should allow a timely diagnosis and appropriate care of this life-threatening condition.
- Point-of-Care Echocardiography is an indispensable tool in the investigation of complex medical conditions.