



Peripartum Cardiomyopathy

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Reaching The Unreached FOGSI 2010 INITIATIVE

Definition - PPCM

- Dilated cardiomyopathy of unknown cause resulting in cardiac failure that occurs in the peripartum period in women without any preexisting heart disease
- Heart failure occurs from one month before to within five months after childbirth



A True Story - December 8 2009

29 years old, unbooked gravida 2 at 36 wks of gestation with no previous cardiac disease

Reported with :

- o Fatigue , Dyspnoea , Edema feet – 1month ;
- o Absent fetal movement - 1d

On Arrival :

- o Dyspnoeic at rest, SPO2- 60% on room air,
- o Cyanosis+, JVP Raised, Pulse -114 / mt
- o Pulmonary rales ++,
- o Pansystolic murmur
- o Fetal death confirmed by scan



ECHO

- Moderate MR, Mild AR, TR, mod- severe PAH with left ventricular systolic dysfunction
- with dilated cardiomyopathy.
- Ejection fraction of : 26%

ECG- Biventricular hypertrophy with right axis deviation

Diagnosis : Peripartum cardiomyopathy

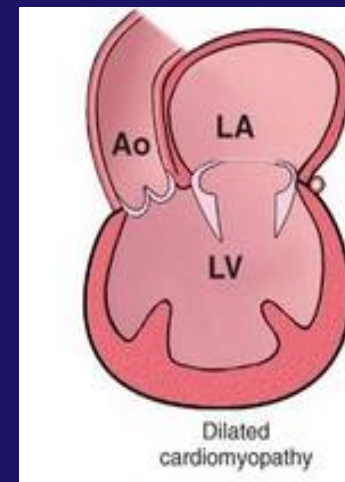
- Rx- • Inj Furosemide, Parenteral Dobutamine, Heparin,
• Nitroglycerine infusion, Ventilated in Cardiac ICU
• 6 hours after arrival she arrested and died



Cardiomyopathy

- ❑ Peripartum cardiomyopathy (PPCM) is acquired primary cardiomyopathy
- ❑ Muscle or electrical dysfunction of the heart often leads to progressive heart failure
- ❑ Incidence 1 in 400 in Haiti to 1 in 15000 live births in USA

PPCM -Criteria for diagnosis




Demakis clinical criteria

- ❑ Cardiac failure occurring in the last month of pregnancy or within 5 months of delivery
- ❑ No prior heart disease
- ❑ Unknown etiology

Echocardiography criteria

- Left Ventricular systolic dysfunction
- Ejection fraction <45%
 - Fractional shortening <30%

Risk factors

- 
- ❑ **Advanced maternal age**
 - ❑ **Twins**
 - ❑ **Multiparous**
 - ❑ **Race- Africans, Asians**
 - ❑ **Obesity**
 - ❑ **Preeclampsia**
 - ❑ **Chronic hypertension**
 - ❑ **Anemia**
 - ❑ **Use of tocolytics**
 - ❑ **Previous PPCM**

Etiology

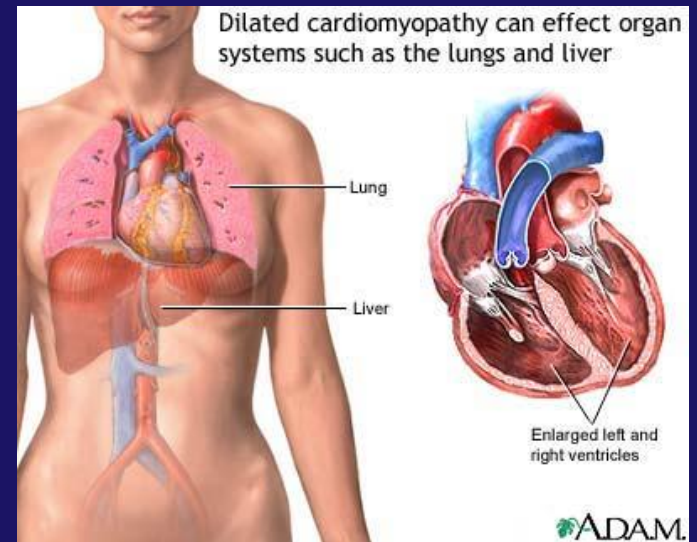
Unknown : Postulated factors are :

- ❑ Viral myocarditis
- ❑ Autoimmune - Immune activation
- ❑ Hemodynamic stress of pregnancy
- ❑ Micronutrient deficiency- selenium
- ❑ Microchimerism- fetal cells in maternal system
- ❑ Familial



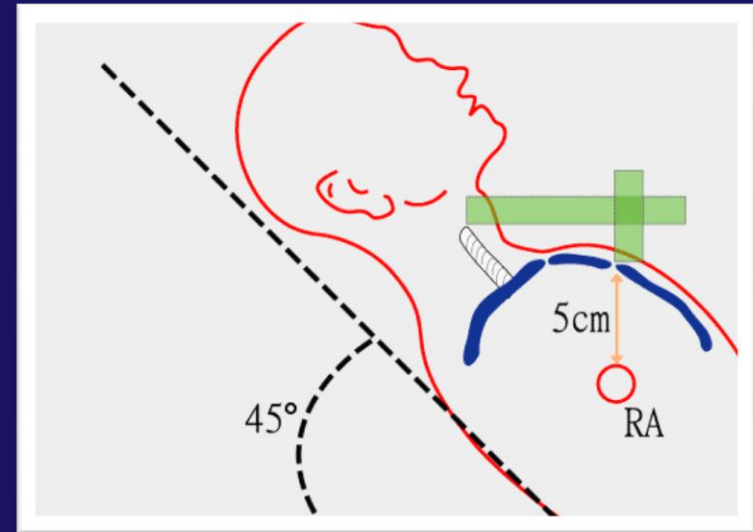
PPCM - Symptoms of congestive heart failure

- Shortness of breath
- Fatigue
- Cough
- Orthopnoea
- Paroxysmal Nocturnal Dyspnoea
- Edema
- Precordial pain
- Palpitations
- Abdominal discomfort



Signs of - Biventricular failure

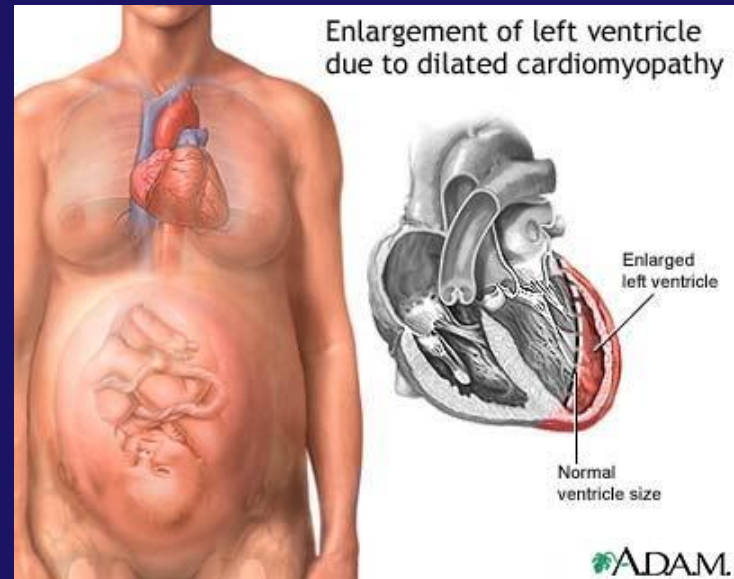
- Edema
- Raised JVP
- Resting Tachycardia
- Hypertension
- Basal Crepitations
- Signs of Pulmonary/ systemic embolism



Cardiac Signs :

- S3 Gallop
- Loud P2
- Arrhythmias
- Murmur of Mitral regurgitation

Presentation



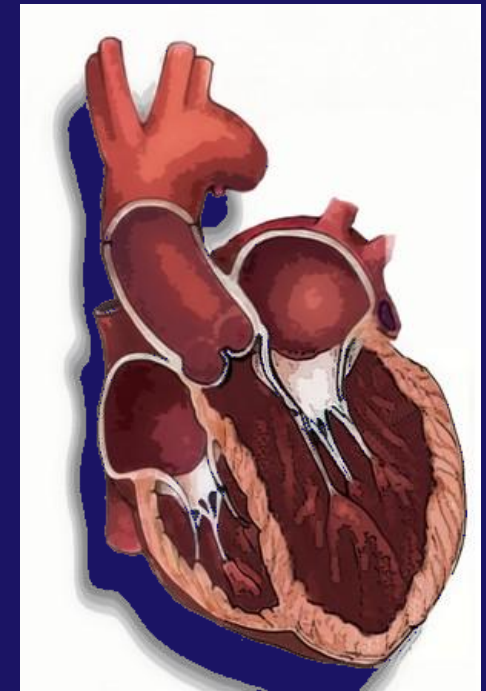
Late Stages :

- ❑ Postural hypotension- reflects low cardiac output and low BP
- ❑ Hepatosplenomegaly
- ❑ Ascitis
- ❑ NYHA classification - III or IV

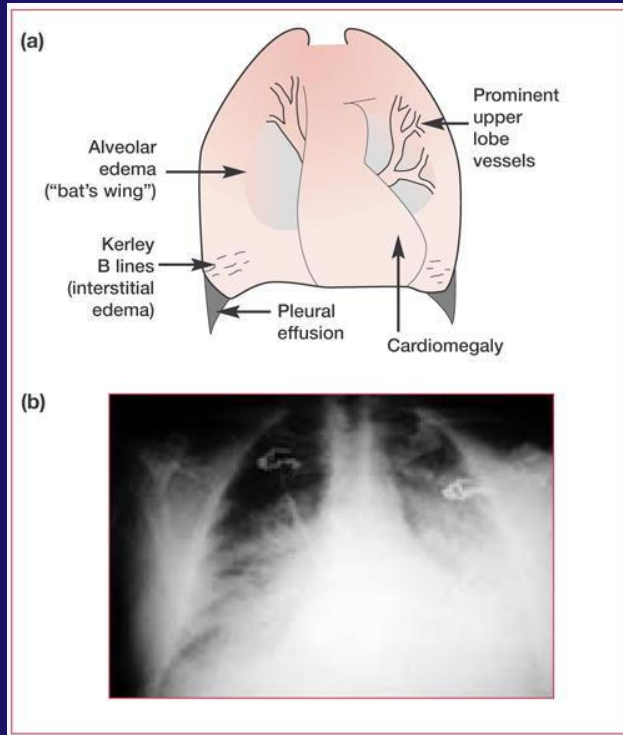
Investigations

Echocardiography

- Confirms diagnosis
- Assess the cardiac chamber size
- Right and Left ventricular function
- Valve function
- Differentiates dilated cardiomyopathy from other types
- Thrombus may be seen
- Small Pericardial Effusion



Chest X-ray



- **Cardiomegaly**
- **Pulmonary congestion**
- **Pleural effusion**

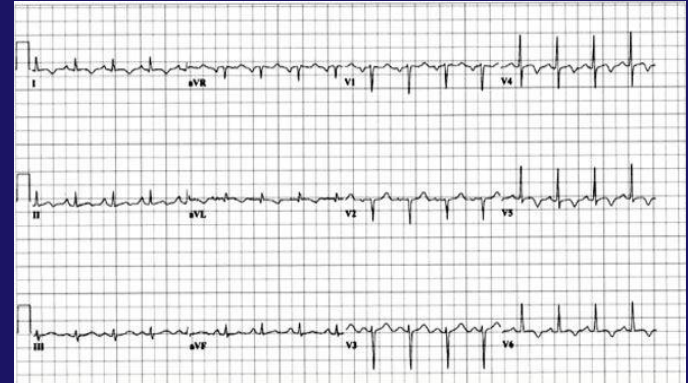
Electrocardiogram

Left Ventricular hypertrophy
- widened QRS

- Sinus tachycardia
- Arrhythmias
- left atrial enlargement,
- lateral T-wave inversions
- Nonspecific – ST wave changes

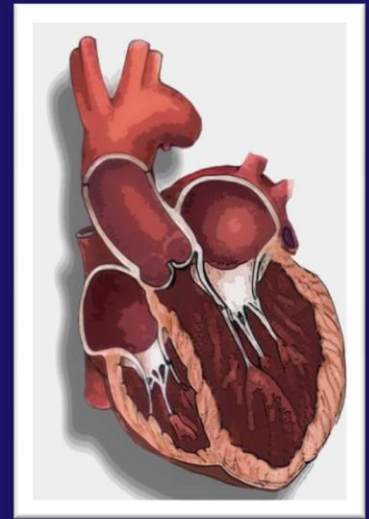
12 lead ECG better

Wider the QRS poorer the LV Function



Investigations

- ❑ BNP – B type natriuretic peptide levels
- ❑ Neurohormone secreted by ventricles
- ❑ Sensitive and specific marker for diagnosis of heart failure
- ❑ Differentiates Respiratory Dyspnoea from Cardiac dyspnoea
- ❑ Normal : 110 – 225 pg/ml
- ❑ Heart failure – 675 – 1600 pg/ml



Treatment

Objectives

- ❑ Reduce after load & Preload
- ❑ To improve contractility
- ❑ Needs Cardiac ICU monitoring
- ❑ Inotropic support
- ❑ Respiratory support



Treatment

General

- Oxygen
- Continuous pulse Oximetry
- Monitor output
- Vital Signs

Medical

- Diuretics
- Digoxin
- ACE inhibitors or Hydralazine
- Beta Blockers
- Anticoagulation





After load reduction – Vasodilators

During pregnancy – Hydralazine

Postpartum - ACE inhibitors

Ionotropic action:

Digitalis – Improves contractility; Controls Rate -
Monitor levels

Parenteral Dobutamine –in
Sick patients

Diuretics – Frusemide

Preload reduction &
Symptomatic relief

Anticoagulation : Heparin before delivery
Warfarin in Puerperium if there is ventricular
thrombus

Drugs in PPCM

ACE inhibitors- [Angiotensin converting enzyme inhibitors]

- ❑ Captopril.
- ❑ Contraindicated in pregnancy –Teratogenicity

Calcium Channel Blockers :


- ❑ Amlodipine useful for Hypertension

Beta blockers :

- ❑ Carvedilol :Reduces afterload, Useful after the acute event, once patient is euvolemic



Labor management

- 
- ❑ Antenatal PPCM
 - ❑ Vaginal delivery possible
 - ❑ Intensive hemodynamic monitoring
 - ❑ Regional analgesia- Contraindicated if on Heparin
 - ❑ Left Lateral position
 - ❑ Cut short 2nd stage
 - ❑ Cesarean delivery for obstetric indication

Other modalities

Medical Therapy Fails :

- ❑ **Ventricular assist devices:** Temporary till transplant-
Intra-aortic Balloon Device, IMPELLA
- ❑ **Heart transplant**


Experimental Drugs

- ? **Immunosuppressive drugs-** if symptoms don't improve
over 2 wks;
- ? **Imunomodulatory therapy**
- ? **Bromocryptine**



Differential Diagnosis

- ❑ Pre existing dilated Cardiomyopathy
- ❑ Embolism- Amniotic fluid
Pulmonary
- ❑ Myocardial Infarction
- ❑ Pulmonary edema - Fluid Overload
Tocolytics



Future conceptions to be avoided

- ❖ Subsequent pregnancy – Decrease in left ventricular function
- ❖ Death

Combined pills contraindicated

Predictors of outcome

Good outcome

- Normalization – left ventricular size & function within 6 months after delivery

Poor Outcome

- Symptomatic for ≥ 2 weeks
- Higher age
- QRS time of ECG of ≥ 120 ms
- Increased cytokine levels



Follow - Up

- ❑ Follow up after 6 months with ECHO
- ❑ Continue :ACE inhibitors
:Beta blockers
- ❑ Salt restriction
- ❑ Modest exercise



Complications

- 
- A stylized human figure in orange and yellow, positioned on the left side of the slide. The figure is composed of simple lines and shapes, representing a person with arms raised.
- ❑ Progressive left ventricular failure
 - ❑ Cardiac Arrest
 - ❑ Arrhythmias
 - ❑ Left Ventricle Thrombus
 - ❑ Thromboembolism
 - Cerebral
 - Mesenteric Artery
 - Pulmonary

Prognosis

- ❑ Mortality 20-50%
- ❑ 50% resolution occurs over 6 months
- ❑ Rest persistent heart failure
- ❑ Better compared to other types of cardiomyopathy

Message

- ❑ Diagnosis of Exclusion
- ❑ Insidious Onset
- ❑ Don't ignore - Fatigue, Dyspnoea ,
Edema as pregnancy / puerperium
symptoms / signs
- ❑ Delay in Diagnosis – poor outcome
- ❑ Prognosis - Guarded

Thank you