Maternal Heart Disease in Pregnancy

Fiona Stewart

Departments of Cardiology and Women’s Health
Auckland City Hospital

Auckland Heart Group
In pregnancy it is abnormal for women to experience

1. Shortness of breath on exertion
2. Orthopnoea
3. Ankle oedema
4. Palpitations
5. Chest pain
Maternal Cardiac Disease in Pregnancy

Cardiac disease is the leading indirect medical cause of maternal death in pregnancy.
Maternal Cardiac Deaths in Australia and New Zealand

Australia (2003–05) - 13 deaths
  - Pulmonary hypertension
  - Cardiomyopathy (including peripartum)
  - Aortic dissection
  - Left ventricular outflow tract obstruction

New Zealand (2006–2009) – 6 deaths
  - Pulmonary hypertension
  - Peripartum cardiomyopathy
  - SBE
  - Mitral valve disease
Cardiovascular Changes in Pregnancy

Peripheral vascular resistance ↓ 30%

Blood volume ↑ > 40%

Stroke Volume ↑ > 25 - 30%

Cardiac Output ↑ 50%

Heart rate ↑ > 10 – 15%
NORMAL CLINICAL SYMPTOMS

• Dyspnoea
• Supine presyncope
• Peripheral oedema
• Palpitations
NORMAL CLINICAL FINDINGS

- $S_3$
- ESM LSE
- Mammary venous hum
Predictors of Adverse Cardiac Events With Pregnancy

• Poor maternal functional class or cyanosis
• Hx TIA or CHF
• Hx Arrhythmia
• Left heart obstruction (AS, HOCM, Coarctation)
• Myocardial dysfunction

Cardiac Problems Arising In Pregnancy

- Peripartum cardiomyopathy
- Myocardial infarction
- Aortic dissection
- Coronary artery dissection
“Ann” P1G2 at 30/40

• Tired and SOB
  – Cancelled midwifery appointment
  – Moved to stay with her mother in Waikato

• 31⁵/40 severely SOB, orthopnoea, PND
  – Urgent review declined by local GP practice (not registered)
  – Seen early evening at A & E centre Rx antibiotics and prednisone
  – Admitted Waikato hospital about 0015
Ann

• On arrival in hospital
  – Cold, clammy Severe resp distress
  – Hypotensive MAP 35 – 50
  – Tachycardic
  – SaO₂ unrecordable
  – No fetal heart

• Intubated
  – VF arrest, 75 mins CPR during LSCS
  – Placental abruption
  – Stillborn son
Ann - Peripartum Cardiomyopathy

- Echo
  - Mild to mod biventricular dilatation
  - LVEF 25%
- Diagnosis Peripartum Cardiomyopathy
- Recovery complicated by
  - Acute renal failure – haemofiltered
  - Coagulopathy
  - Ischaemic toes and later osteomyelitis requiring forefoot amputation and prolonged antibiotics
  - Upper proximal muscle weakness “man-in-barrel” syndrome
  - Eventual full recovery of cognitive function
  - Mild residual LV impairment
PERIPARTUM CARDIOMYOPATHY

• Dilated cardiomyopathy
  Third trimester
  Or 6 month post partum
• Unknown cause
  Good outcome > 50%
  Can recur in subsequent pregnancies
Ann – Early Diagnostic Clues

• Mild SOB is common especially in late pregnancy
• Orthopnoea and PND should not occur in pregnancy
• Any severely unwell pregnant woman, particularly if SOB, should be admitted promptly to hospital
• Mortality is increased in pregnancy from influenza as well as heart failure
• Pregnant women may appear haemodynamically stable until they are in extremis
“Ngaire” aged 41
P2G3  34/40

• Gestational hypertension
• Gestational diabetes
• Smoker

• 1 h central severe crushing chest pain
• 2/7 later further 1h chest pain
Ngaire at 34/40

• ED – pale, sweaty, ↑HR
• Anterior STEMI
• Troponin T = 8850
• Transferred to ACH for PCI
Chest Pain in Pregnancy

- Differential diagnosis
  - Gastro Oesophageal Reflux
  - Aortic dissection
  - Coronary artery dissection
  - Myocardial infarction
  - Musculo-skeletal
Ngaire

• LAD dissection stented x3
• Echo LVEF 36%
  – Anterior akinesia
• Rx aspirin, clopidogrel, metoprolol
• (ACEI and Statins contraindicated)

• 3/52 later readmitted in LVF
  – LV mural thrombus
  – Delivered by emergency LSCS
In pregnancy it is abnormal for women to experience

1. Shortness of breath on exertion
2. Orthopnoea
3. Ankle oedema
4. Palpitations
5. Chest pain