MEDICAL Emergencies in the Birth Unit (and early postpartum period)

A/PROF SANDRA LOWE
Inherent differences in the way a physician considers emergencies versus the anaesthetist
Approach to emergencies in the birth unit

- Appropriate maternal and fetal clinical assessment
- Emergency stabilisation-hydration, bleeding, airway and oxygen
- Immediate action
- Co-ordinated response / Teamwork
- Drill/Practise
Medical Emergencies also require

- Consider differential diagnosis of the presentation
  - Pregnancy specific
  - Pregnancy related - worsening of pre-existing condition, co-incidental
- Treat the cause
  - Often BUT NOT ALWAYS involves delivery
  - Appropriate postpartum management to optimise recovery
Case 1

- 22yr old primip
- 28 weeks gestation
- Presents with headache, increasing oedema
- O/E HR 80 BP 200/105mm Hg x2
- Gross oedema - face, hands, lower limbs, abdomen
- Fundal height 33 cm, FH heard
- Reflexes brisk
- Retinal fundi - no papilloedema
- Urinalysis 4+ protein
Management

- Canula
- CTG
- Treatment for severe, urgent HT
  
  SOMANZ Guidelines 2014
  ACOG Committee Opinion No. 692, 2017
  NICE Clinical Guideline 107 2010
  
  - N/Saline bolus 250ml
  - Labetalol 20mg repeated 5 minutes later
  - BP decreased 160/90mm Hg
  - Commenced on oral labetalol 200mg tds

- Investigations
Diagnosis

- Severe preeclampsia

BUT IS THERE ANY DIFFERENTIAL DIAGNOSIS?
Bloods:
- Hb 134 g/dL, WCC 8.4, Plat 94
- Creat 80 umol/L
- AST 100, ALT 100 [<30]
- Urate 0.46mmol/l
- Urine protein:creatinine ratio 380

Fetal Ultrasound
Diagnosis

- Severe preeclampsia
- Mirror syndrome
Mirror syndrome or Ballantynes syndrome

- Preeclampsia-like disease characterized by fetal or placental hydrops and maternal oedema with or without features of pre-eclampsia
- Maternal appearance mirrors the oedema of the fetus and the placenta
- Aetiology:
  - Variety of causes of hydrops fetalis including: rhesus isoimmunization (29%), twin-twin transfusion syndrome (18%), viral infection (16%) and fetal malformations, fetal or placental tumors (37.5%).
- Maternal key signs are:
  - Oedema 90%
  - HT 60%
  - Proteinuria 40%
  - Abnormal liver enzymes 20%
  - Headache and visual disturbances 15%
- Outcomes: Intrauterine death and stillbirth 36%
  - Severe maternal complications including pulmonary edema 21.4%

Braun et al, Fetal Diagn Ther 27(4):191, 2010
Reversible fetal/placental causes of mirror syndrome

- Some cases of fetal anemia
- Supraventricular tachycardia
- Hydrothorax
- Bladder outlet obstruction
- Viral infections including parvovirus and CMV

Management:
- Treat maternal features of preeclampsia
- Treat any reversible cause of hydrops fetalis eg transfusion for fetal anemia
What is the risk of preeclampsia in the presence of fetal hydrops?

- Hydrops was associated with an increased risk for severe preeclampsia (5.26 versus 0.91%, \( p < .001 \)) but not mild preeclampsia (2.86 versus 2.02%, \( p = .29 \)).

- Hydrops was also associated with increased rates of eclampsia, acute renal failure, pulmonary edema, postpartum hemorrhage, blood transfusion, preterm birth, and neonatal death.

Burwick RM et al, 2017 J Mat, Fet and Neonatal Med published online
Management

- Management of severe preeclampsia
  - Control HT
    - Urgently reduce BP to <160/90 mm Hg within 1 hour
      - Requires protocolised approach to achieve this target
      - Audit regularly
    - Strongly consider therapy to reduce BP to ≤140/90 mm Hg
  - Assess and manage maternal condition:
    - Fluid status
    - Renal impairment
    - Liver involvement
    - Thrombocytopenia and coagulopathy
    - Magnesium sulfate for prevention of seizures
  - Plan timing and type of delivery
Case 2
G2 P2 age 30
- Spont. labour at term
- Six hour labour, unremarkable
- Delivered 10pm
- 4 hours later, sudden onset retrosternal chest pain
- Didn’t report pain until morning
- Reviewed about 17 hours after delivery
Pleuritic, no change with posture
No dyspnoea, no cough, no haemoptysis

**Family history**
- Father had DVT x 2, lifelong warfarin
- Sister DVT x 1
- No known thrombophilia

**Past history**
- Prev on OCP
On examination

- Haemodynamically stable
- PR 72, RR 12, BP 108/78
- CVS normal
- RS normal
- Calves soft, nontender
ECG:
SR 82, T inversion III, V1-4

FBC:
Hb 104
WCC 9.6
Plat count 107
Differential diagnosis?

Further investigation?

Immediate management?
Pneumomediastinum

- Rare: but true incidence unknown
- Arises from rupture of alveoli due to the high intra-alveolar pressures generated by Valsalva during labour
- Usually occurs during the second stage of labour but symptoms are often not noticed until after delivery
- Resolves spontaneously
Case 3
G4P3 22/40
42 years old

**Presentation**
- Routine visit
- BP 210/120mmHg
- Unwell 2 days, nonspecific, exhausted, light headed, stressed
- No headache or visual disturbance
- Booking BP 115/70 mmHg

**Past history**
- Transient HT age 24 when stressed
- Never treated, resolved after 6 months
- Migraine
On examination

- PR 70, BP 190/120mm Hg
- No oedema, no hypereflexia
- U/A: 1+ protein
- Fundal height=dates
At 1450:
- Acute severe retrosternal chest pain
- Nonpleuritic
- No resp distress
- Severe headache, bilateral, throbbing
- Nausea
- Photosensitivity

5mg IV hydralazine
labetalol po 100mg
1mg IV metaraminol
Differential diagnosis?

Further investigation?

Immediate management?
- Hb130, Plats 233
- Creat 56, K 3.6
- Uric acid 0.19
- LFT normal
- Urine PCR neg
ECG 1510hrs
Diagnosis

- Acute coronary insufficiency
- Secondary to acute hypotension
Troponin initially <0.1
Repeat 0.3 → 0.6
ECHO:
- Normal LV size and function
- Mild LVH
- Mild MR
- Mild pulmonary HT

Repeat ECG following day
- Plasma catecholamines normal
- Cortisol 428 [155-599]
- Renin 22 [3.3-41]
- Renal artery Dopplers normal
CVS disease risk assessment

- AGE
- Nonsmoker
- No diabetes but ?insulin resistance
- No FH

**Family history**
- GF died age 41 with intracranial haemorrhage
- Parents A&W 70s, both have HT
- Ovarian cancer, bowel cancer

**Past history**
- PCOS Rx metformin
- Prev on OCP without problem
Progress

- Gradually stabilised labetalol 200 mg tds+nifedipine SR 30mg od
- Monitored closely
- Delivered 36/40, 2.2kg
- Remained hypertensive postpartum
- Post partum: Exercise stress test negative
Chest pain in labour ward and postpartum

- Underlying diagnosis is critical
- Pregnancy specific causes:
  - Preeclampsia
  - Pneumomediastinum
- Pregnancy related:
  - Gastro-esophageal reflux
  - Musculoskeletal
    - Pulmonary emboli
    - Pleurisy/infection
    - Angina
    - Aortic dissection
Case 6

- Prev well 36 yr old
- Presented with new onset HT in labour at 38+/40
- No proteinuria, normal bloods
- Epidural
- Proceeded to Ventouse delivery
- Post partum Rx nifedipine 30mg OROS bd
That night complained of sudden onset of severe generalised headache - worse than labour

No photophobia

No nausea or vomiting

BP 130/90 mm Hg

No focal neuro but difficult to examine as she’s overwhelmed by pain

? neck stiffness
Differential diagnosis?

Further investigation?

Immediate management?
Headache and focal neurological deficit

- Pregnancy specific:
  - Preeclampsia/Hypertension
  - Dural puncture
  - Pneumocephalus after epidural

- Pregnancy related:
  - Primary headache including migraine, sinus etc
  - Cerebral sinus venous thrombosis
  - Post-partum cerebral angiopathy
  - Meningo-encephalitis
  - Intracerebral or subdural haemorrhage
  - Thrombotic stroke
  - SOL
  - Vertebral/ Carotid artery dissection
  - Idiopathic intracerebral hypertension
  - PRES
  - Cocaine, anticoagulants
### Timing of stroke in pregnancy

<table>
<thead>
<tr>
<th></th>
<th>Third trimester</th>
<th>2 days before to 1 day after delivery</th>
<th>Day 2 to 6 weeks</th>
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<tbody>
<tr>
<td><strong>Sub-Arachnoid haemorrhage</strong></td>
<td>OR 0.8 95%CI 0.2-2.5</td>
<td>OR 46.9 95%CI 19.3-98.4</td>
<td>OR 1.8 95%CI 0.5-4.9</td>
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<tr>
<td><strong>Intra-cerebral haemorrhage</strong></td>
<td>OR 1.3 95%CI 0.3-4.1</td>
<td>OR 95 95%CI 42.1-194.8</td>
<td>OR 11.7 95%CI 6.1-21.6</td>
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<tr>
<td><strong>Cerebral Infarction</strong></td>
<td>OR 2.2 95%CI 0.8-4.8</td>
<td>OR 33.8 95%CI 10.5-84.0</td>
<td>OR 8.3 4.4-14.8</td>
</tr>
</tbody>
</table>
Back to our patient

- CT without contrast-no haemorrhage, some patchy cerebral oedema
- Still had severe headache, little relief with analgesia
- No focal neuro
- No stroke
- MRI/MRA/MRV
Postpartum cerebral angiopathy

- Call-Fleming syndrome
- Rare, reversible cerebral vasoconstriction syndrome
- Headache and focal neurologic deficits, altered consciousness, ischemic and/or hemorrhagic strokes
- Angiographically: transient, fully reversible cerebral vasoconstriction
- Treatment:
  - cessation of vasoconstrictors
  - calcium channel antagonists
  - corticosteroids
  - blood pressure control
  - and anticonvulsants
  - Occ’ly use immunosuppressants
Commenced on higher dose nifedipine
Gradual and unremarkable recovery
Subsequent pregnancy 2 years later-uncomplicated
Medical Emergencies in the labour ward

- Manage the emergency-RESUSCITATE
- Consider differential diagnosis of the presentation
  - Pregnancy specific
  - Pregnancy related- worsening of pre-existing condition, co-incidental
- Manage the patient(s) with prompt, standard supportive care
- Treat the cause
  - Often (but not always) involves delivery
  - Appropriate postpartum management to optimise recovery