PREGNANCY-INDUCED HYPERTENSION & PREECLAMPSIA

Hypertension occurs in ~6-8% of all pregnancies.

Definitions:

- **Gestational hypertension**
  - new BP > 140/90 mmHg occuring during pregnancy (>20 weeks gestation) and resolves in the postpartum period (within 3 months of delivery).
- **Preeclampsia**
  - gestational hypertension plus proteinuria (>300mg in 24 hours or 1+ protein on 2 separate urinalyses within 4-6 hours).
  - Regarded as severe if in the presence of multiorgan involvement.
- **Eclampsia** is the occurrence of seizures in a patient with signs of preeclampsia.

Pre-eclampsia is the commonest medical complication of pregnancy & is associated with substantial morbidity and mortality for both mother and baby. It is a multisystem disorder of unknown aetiology that is unique to human pregnancy and is characterised by an abnormal vascular response that is associated with increased systemic vascular resistance, enhanced platelet aggregation, activation of the coagulation system, and endothelial-cell dysfunction.

Risk factors for the development of preeclampsia include; advanced maternal age, previous preeclampsia, obesity, multiple pregnancies, preexisting thrombophilia (Factor V Leiden, Protein C or S deficiency, homocysteinaemia etc) & limited exposure to father's sperm.

Complications:

- CNS
  - Eclampsia (seizures)
  - Cerebral haemorrhage or oedema
  - Cortical blindness
  - Retinal oedema
  - Retinal blindness / ischaemia
- Renal
  - Cortical or tubular necrosis
- Respiratory
  - Laryngeal oedema
  - Pulmonary oedema

- Liver
  - Jaundice
  - HELLP syndrome
    - Haemolysis
    - Elevated LFTs
    - Low PLTs
  - Hepatic haemorrhage or rupture
- Haematological
  - Disseminated intravascular coagulopathy
  - Microangiopathic haemolysis
- Placenta
  - Infarct or abruption
- Foetus
  - Preterm delivery
  - Intrauterine growth retardation
  - Hypoxia / neurological sequelae
  - Periterm death

Clinical Features:

- Severe hypertension (systolic > 160mmHg or diastolic > 110 mmHg)
- Persistent &/or severe headache
- New epigastric pain & tenderness
- Vomiting
- Visual disturbances (blurred vision, photophobia, diplopia, scotomata & cortical blindness)
- Hyperreflexia (brisk deep tendon reflexes)
- Oliguria
- Dyspnoea or retrosternal chest pain
- New swelling to hands, face or feet.

Investigations:

- Raised serum creatinine
- Thrombocytopenia (PLTs < 100)
- Evidence of haemolysis (elevated Bilirubin or low haptoglobins)
- Haemoconcentration
- Deranged LFTs (2x upper limit of normal)
- Urinalysis: 1+ protein, >300mg / 24hours.
- CT-Brain: ?intracerebral haemorrhage (patchy haemorrhages & micro-infarcts can occur) ?sinus thrombosis

Management:

The textbook answer lies with adequate and proper prenatal care & monitoring, including identification of women at high risk, early detection by the recognition of clinical signs and symptoms, and progression of the condition to severe state.

Whilst the only definitive 'cure' is delivery (which is always appropriate for the mother), it might not be best for a very premature foetus. The decision between delivery and expectant management depends on fetal gestational age, foetal status and severity of maternal condition at time of assessment.

From an Emergency Department perspective, it involves early identification of the disease with prompt referral to Obstetrics. For the ED doc, it is important to know the following;

- Suspect & find evidence of end-organ dysfunction
- Control blood pressure (aim diastolic BP <105 mmHg)
    - Methyldopa & CCBs for long term therapy
    - Hydralazine (5-10mg IV q20min)
    - Labetalol & Nimodipine also appropriate
    - Avoid beta-blockers (esp. Atenolol), ACEi & ARBs.
- Control seizures
    - Magnesium sulfate:
        - 4-6 grams loading, then 2g/hr infusion
        - Observe for respiratory depression & loss of reflexes (calcium gluconate is an appropriate treatment)
        - Halves the risk of eclampsia
- Avoid diuretics & hyperosmolar agents, as well as limit IV fluids.
- Early referral for delivery planning

Post-Partum Preeclampsia

Preeclampsia is generally cured by delivery of the placenta, however in some women the disease process can worsen during the first 48 hours following delivery. ***Delayed postpartum preeclampsia*** can be defined as signs and symptoms of the disease leading to readmission more than two days but less than six weeks after delivery. ***These presentations are usually atypical*** and these women might be at risk for pulmonary oedema, renal failure, HELLP syndrome, postpartum eclampsia and stroke and therefore warrant close observation & followup.

One particular study (retrospectively following 152 patients with delayed post-partum preeclampsia) demonstrated ~63% had no antecedent diagnosis of hypertensive disease. 14.5% went on to develop eclampsia. The most common presenting complaint was headache (69.1%)

References.

- Rosen's Emergency Medicine. Concepts and Clinical Approach. 7th Edition
- Paul Young's Intensive Care Mind Maps - "Hypertensive Emergencies in Pregnancy"
- Sibai B, Dekker G, Kupferminc M. Pre-eclampsia. ***Lancet*** 2005; 365: 785–99
- Duley L, Meher S, Abalos E. Management of pre-eclampsia. ***BMJ.*** 2006 Feb 25;332(7539):463-8.
- Al-Safi Z et al. Delayed postpartum preeclampsia and eclampsia: demographics, clinical course, and complications. ***Obstet Gynecol.*** 2011 Nov;118(5):1102-7.
- Stella CL et al. Postpartum headache: is your work-up complete? ***Am J Obstet Gynecol.*** 2007 Apr;196(4):318.e1-7.
- Sibai BM. Etiology and management of postpartum hypertension-preeclampsia. ***Am J Obstet Gynecol.*** 2012 Jun;206(6):470-5. Epub 2011 Sep 16.
- UpToDate.com – "Preeclampsia: Clinical features and diagnosis"