Hypertensive Disorders of Pregnancy

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Aims and Objectives

Provide an understanding of Hypertensive Disorders of Pregnancy likely to result in critical care.

- Definitions
- Symptoms
- Management and treatment
- Discussion of a clinical example

Why Hypertensive Disorders of Pregnancy?

- Associated with maternal critical illness
- Previously leading cause of maternal death
- 2 Deaths (2012-2014) associated with substandard care
- 40,000 deaths globally [5 deaths per hour]

In order to understand **Eclampsia** and **HELLP** we need an awareness of

PreEclampsia

PreEclampsia

- New hypertension presenting after 20 weeks gestation with significant protienuria (1+ or more on urine dip)

- Hypertension is further catagorised as:

Mild- BP 140-149 / 90-99

Moderate- BP 150-159 / 100-109

Severe- BP >160 / 110

Cause of PreEclampsia

- PreEclampsia is a **multisystemic** pregnancy induced syndrome resulting from endothelial cell dysfunction
- If the disease progresses to Eclampsia and/or HELLP maternal mortality and mobidity increases
- Triggering factor is unknown however much of the pathophysiology is understood.

Pathophysiology

Defective Placental Implantation and ischemia leads to the release of a substance toxic to endothelial cells into maternal circulation

A maternal vascular inflammatory response producing vasoconstriction and capillary leak and sustained hypertension

Multi-Organ endothelial cell injury occurs leading to poor tissue perfusion of all organ systems

Pathophysiology

Affecting:

- Placental perfusion
- Renal function
- Fluid and electrolyte imbalance
- Pulmonary oedema
- Central nervous system
- Coagulation involvement
- Hepatic involvement

Presentation of PreEclampsia

- Raised Blood Pressure
- Proteinuria
- +/- Oedema
- Frontal headache
- Visual disturbances

Eclampsia

- Convulsive condition associated with PreEclampsia
- Estimated 4% of women with PreEclampsia will develop Eclampsia
- 6% of Eclamptic women did not have established PreEclampsia prior to first seizure
- Overall incidence estimated at 0.5-4%

Presentation of Eclampsia

- Seizures – 38% Antenatal
  18% Intrapartum
  44% Postnatal

Warning signs of impending Eclampsia –

- Persistant headache
- Visual disturbances
- Epigastric Pain
- Restlessness

HELLP

- **H**aemolysis, **E**levated **L**iver enzymes and **L**ow **P**latelets
- Variant of severe PreEclamsia or Eclampsia
- Multisystemic dysfunction due to vasospasm, endothelial damage.
- Condition can deteriorate rapidly
- Life threatening complication of pregnancy.

Presentation of HELLP

- ?Raised blood pressure
- ?Proteinuria
- Epigastric pain / Right upper quadrant pain
- General malaise
- Jaundice
- Nausea +/- vomiting
- Nonspecific viral symptoms
- Dyspnea

Diagnosis

- Early recognition and prompt involvement of senior multidisciplinary staff is essential in improving care.
- Check BP and urine dip at every antenatal contact, regardless of care setting.
- Use of Obstetric Early Warning Score for all pregnant and recently delivered women.
- Communicate with Labour Ward Coordinator regarding all pregnant women who attend ECC
- Think **PreEclampsia, Eclampsia, HELLP** as a differential diagnosis.

Investigations to aid diagnosis

- FBC looking for platelet count
- U&E looking for GFR, Urea and Creatinine
- LFT looking for raised ALT (ignore Alk Phos)
- Urates looking for an increased level
- Coagulation Screen looking for abnormalities
- Urine Protein-Creatinine Ratio an increase level confirming renal involvement

It is essential that all results of investigations are followed up!

Management

- The aim of management is to prevent Eclampsia
- The only cure is termination of pregnancy
- Aim to keep hypertension 150/100 to 140/90
- 1:1 High Dependency Care
- Strict Fluid Balance 80mls per hour

Blood Pressure Management

- Ensure the correct size of BP cuff is used, using the same arm, in a sitting position with the arm at heart level, using korotkoff V.
- **Anti-Hypertensives**

  Labetalol – Oral and Intravenous use

  Nifedipine

  Hydralazine

  ?Methyldopa
- Aiming for levels to be 150/100 to 140/90

Anti Convulsant Therapy

- Magnesium Sulphate used for both prophylaxis and treatment of Eclampsia
- Continued for 24-48Hrs postnatally due to increased risk of seizures at this time
- Risk of Magnesium toxicity is low unless evidence of renal impairment and oligouria
- Antidote Calcium Gluconate should be readily available – 10mls of 10% over 10 minutes

Specific management for pregnant women

- Initial BP and urine dip
- Use of Obstetric Early Warning Score
- Prompt involvement of midwifery and obstetric staff
- Fluid restriction to 80mls per hour
- Left lateral position

Conclusion

Hypertensive disorders of pregnancy are unpredictable and can progress rapidly. Multidisciplinary team working with senior clinicians is essential to improve care and outcomes for families.

In 2009-2014 there were 14 deaths associated with hypertensive disorders of pregnancy. In 13 of these if improvements in care were made it was felt outcomes could have been different.

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