# 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.***

# References


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