Hypertensive disorders in pregnancy

- Almost 10 - 12% of antenatal patients are diagnosed as hypertensive
- Directly responsible for 20% of maternal deaths
- Perinatal mortality increased
- 25% of all inductions in the labour ward are because of hypertensive disorders of pregnancy

Etiology: Still an enigma

Many theories: Increased vascular sensitivity to angiotensin II

Imbalance in prostaglandin production

- ↓ Prostacyclin / Thromboxane ↑

  ↓ Nitric oxide / Endothelins ↑

- ↑ vascular endothelial growth factor (VEGF) (placental)

- Immunological factor

- Genetic predisposition

Pathophysiology

Vasospasm in all organs decreased placental perfusion

The pathogenesis of preeclampsia may incorporate two stages:

- Deficient trophoblast invasion of spiral arteries
- Widespreadoxidative stress and inflammatory response
- Particularly targeting the endothelial cells resulting in a multi system disorder

The new classification for hypertensive disorders:

- ***Gestational hypertension***

  BP 140/90 or more for 1st time during pregnancy. No proteinuria

- ***Preeclampsia***

  BP 140/90 or more after 20 weeks

  Proteinuria > 300 mg / 24 hrs or ≥ 1+ on dipstick

  Severe: 160/110

  Proteinuria 2.0 G / 24 hrs (or 2+ on dipstick)

  S. creatinine 1.2 mg / dl or mm

  Platlets < 100,000 /m^3

  Increased LDH

  Elevated SGOT, SGPT

  Persistent epigastric pain

Eclampsia

New onset seizure in a woman with preeclampsia

Superimposed preeclampsia (on chronic hypertension)

New onset proteinuria ≥ 300 mg / 24 hrs or a sudden increase in proteinuria or rise in BP > 30/15 or platelet count < 100,000 in a woman with previous hypertension and proteinuria before 20 weeks gestation.

Chronic hypertsion

BP ≥ 140/90 Hg before pregnancy or before 20 weeks of pregnancy

Clinical Practice

1. Some precautions for checking BP
   a) Should be with mercury / aneroid sphygmomanometer or validated automated device
   b) Appropriate cuff size should be used. Bigger is better than smaller
   c) Setting - relaxed quiet environment

Position

Lying at a 45 degree angle or sitting. Right or left arm (higher value if difference is > 10 mm)

Dependent arm if in a lateral position

Korotkoff 1st (systolic) and 5th (diastolic) is to be taken

Management

- BP 140/90 or more (Gestational hypertension)
- In addition proteinuria > 300 mg / 24 hours — Preeclampsia
  or + or more — on dipstick
- Hb, PCV, Platelet count, PBF
- Urine : albumin, sugar, M/E
- 24 hours urine protein
- Renal function tests:
  - Blood urea
  - Serum creatinine
  - S. uric acid

- Liver function test

  To check for haemolysis elevated liver enzyme low platelet I.e.

  HELLP syndrome

- Fundus examination

- GTT (All hypertensive patients are also at high risk for GDM)

Maternal:

- History and watch out for ominous signs
- BP monitoring 6 hourly
- Urinary output / 24 hours
- Urine alb. OD
- Fetal monitoring
    - Fundal ht / girth
    - Fetal kick chart
    - Biophysical profile (every week)
    - NST more frequently-

Role of antihypertensives drugs

If diastolic BP ≥ 100 mm (ideally ≥ 105 mm Hg), antihypertensive drugs are started

Choice

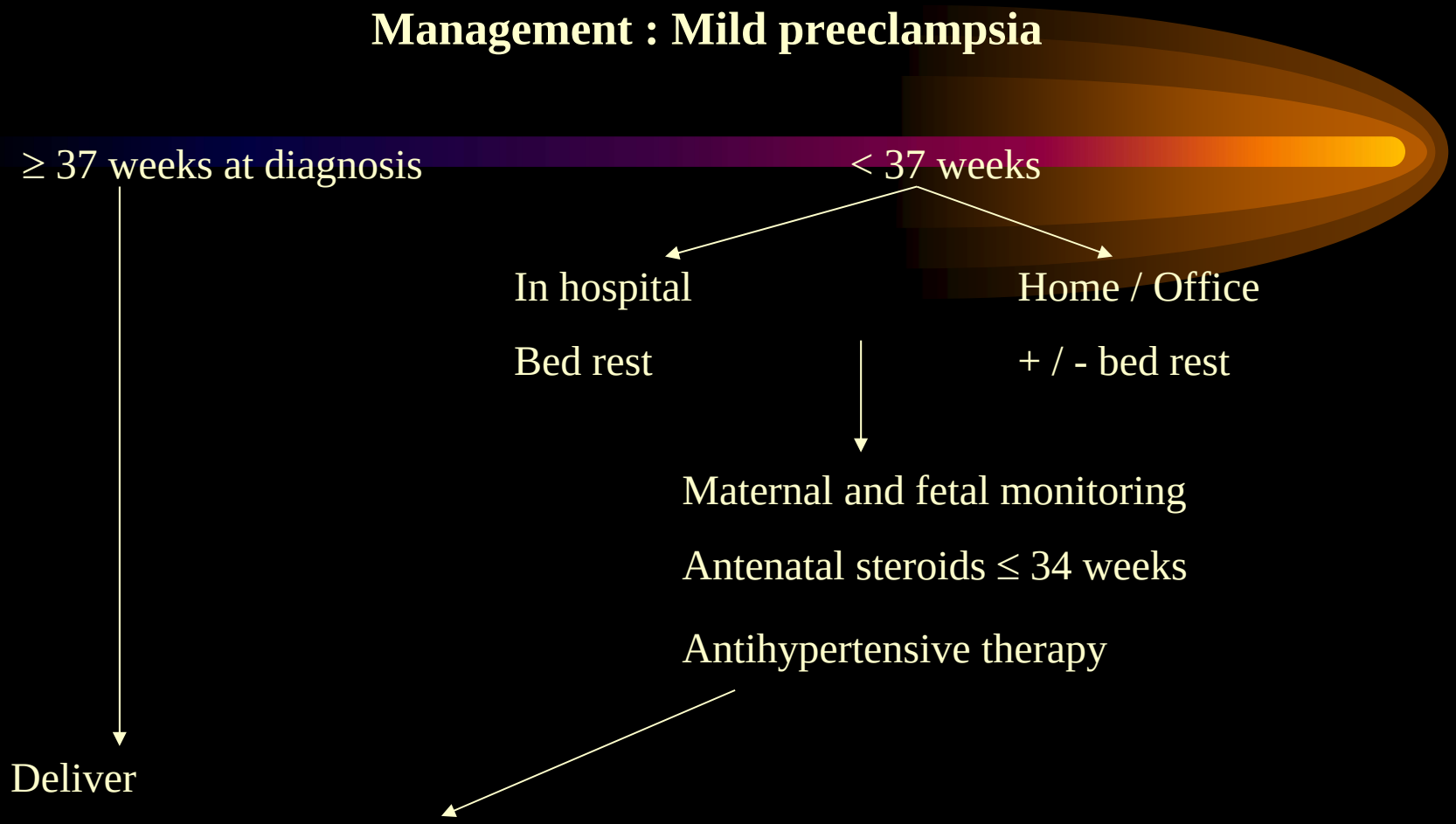
- M-dopa
- Labetolol are equally good and can be used
- Nifedipene

If patient is <36 weeks and hypertension is such that she may require preterm IOL, Betamethasone for enhancing lung maturity should be administered

Mild Preeclampsia : / Gestational hypertension

- Hospital / home management
- Bed rest
- Home BP records and fetal kick chart
- Monitor twice a week
- Consider induction of labour at 37 weeks

Management : Mild preeclampsia



Indications for termination

If the patient’s clinical profile is worsening

- BP not controlled even with 2 drugs
- Increasing proteinuria
- Oligouria
- Ominous signs
- BPP < 4 or reversal of diastolic flow on doppler

Morbidity associated with hypertensive disease

Maternal:

- Abruptio placenta
- Central Nervous System Event (e.g. stroke, seizure)
- End organ dysfunction like renal tubular necrosis, acute fatty liver, ac. CHF

Coagulopathy HELLP

Fetal / Neonatal

- Sequelae of Prematurity
- Ischaemic encephalopathy
- Intrauterine growth restriction

HELLP (in almost 10% of severe preeclampsia - eclampsia)

Haemolysis : Schistocytes on the peripheral blood film lactic dehydrogenase > 600 μ/L, total bilirubin > 1.2 mg

Elevated Liver Enzymes SGOT / SGPT > 70 μ/L

Low Platelets < 100,000/mm^3

Management :

- High dose corticosteroids dexamethasone 10 mg 12 hourly
- Early delivery

Eclampsia

New onset seizure in a woman with preeclampsia

Incidence :	1 in 100	India
	1 in 2000	USA

- Delivery
- Mag sulphate (anticonvulsant)
- Antihypertensive

Maternal mortality in Eclampsia

- 489 eclampsia patients
- 22,684 deliveries
- Inc. 2.13%
- 20 patients died
- Mortality of 4.04%

Mortality

Maximum mortality was in :

- Young women < 20 years
- POG < 28 weeks
- Induction to delivery interval > 12 hours
- Deeply comatose between convulsions

Recent recommendations for deeply comatose patients:

- Dexamethasone 32 mg I/V stat and then 8 mg 6 hourly helps reduce cerebral edema.

Can pregnancy induced hypertension be predicted ?

Can it be prevented?

a) High risk factors for PIH

- Primigravide sp age > 35, < 18 years
- Pre existing hypertension
- Medical disorders like diabetes
- Obesity
- Pace and ethnicity (African - America)
- Genetic (More if mother / sister had PIH)
- Multiple pregnancy
- Subfertility patients sp PCOs patients are at increased risk

Tests for predicting PIH

- Mean arterial pressure ≥ 90 mm in 2nd trimester
- Roll over Test
- Angiotensin II Sensitivity Test (Research tool)
- Urine human chorionic Gonadotropin

  β-subunit core Fragment (↑ → predicts PIH)
- Hypocalciuria : A level < 195 mg / 24 hours urine (87% specificity)
- Urinary Kallikrein - Creatinine Ratio
- Micro albuminuria - (20 - 200 μg 50%)
- MSAFP : Increase in presence of normal fetus - increased incidence of PIH
- Elevated hCG - ↑ PIH
- Leptin - Increased levels - ↑ Preeclampsia

RCOG Guidelines

- Antiplatelet therapy, particularly low dose aspirin (75 mg) reduces the risk of preeclampsia by about 15% for women at both low and high risk. There is a similar reduction in the risk of perinatal death. Aspirin should be considered particularly for women at high risk. In countries with a high prevalence of pre eclampsia more widespread use may be worthwhile. (Grade B recom.)

- Data from small trials point towards a protective role of antioxidants like Vit C and E. Large trials are underway

ACOG Guidelines

- No role of low dose aspirin or calcium supp[illegible]
  PIH

- Antioxidants in form of 1000 mg Vit C and 400 mg Vit E is under evaluation