HYPERTENSIVE DISORDERS IN PREGNANCY

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Hypertension in Pregnancy

Blood pressure >140/90 mmHg

- preferably confirmed by two readings 6 hours apart
- If severe, another reading in 15 minutes is done

Classification

- Preexisting (Chronic)
- Gestational
- Preeclampsia
- Eclampsia

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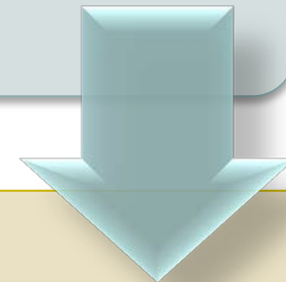
Chronic Hypertension

- Is diagnosed before pregnancy
- Is diagnosed before 20 weeks gestation
- persists beyond 6 weeks postpartum.
- Of whatever cause
  - primary: (essential)
  - secondary:
    - renal: diabetic nephropathy, glomerulonephritis,
    - renovascular: renal artery stenosis
    - endocrine: pheochromocytoma

Severity & Complications

Severity

- Severe HTN:
  sBP 160 or dBP 110
- Non-severe HTN



Complications

- superimposed PE-E.
- Abruptio placentae
- IUGR

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Treatment

- ANC: Monitor for complications
- antihypertensive drugs:
  - alfa methyldopa (aldomet) (B):: The 1st choice drug
    - is effective & safe for both mother & fetus.
    - acts centrally to deplete catecholamines.
    - Dose: 250-500 mg orally /8 hours (max 2 grams per day)
  - Labetalol (C): a1- and b1- blocker
  - Pindolol (C): beta blockers
  - Nifedipine (C)
- Plan delivery at complete 37 weeks.

Pre Eclampsia

- Hypertension with proteinuria.
- It is diagnosed in pregnancy after 20 weeks
- regresses postpartum.
- incidence: 5-10%.

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Etiology

- Endothelial cell damage & dysfunction
- Evidence of endothelial damage
  - increased
    - fibronectin,
    - laminin,
    - endothelin
  - decreased
    - Prostacyclin
    - Nitric oxide
- what causes endothelial changes in PE?

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Predisposing factors

- extremes of age: <20 or >35
- parity: PG
- positive family history
- Obstetrics: twins, vesicular mole, fetal triploidy
- Medical: diabetes, chronic hypertension
- Dietary factors: protein, Ca, folic acid deficiency, obesity
- low social class

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Maternal Complications

- eclampsia:
  - in 1% of preeclamptic patients.
  - It is due to vasogenic cerebral edema
- Obstetric Hemorrhage
  - Abruptio placentae
  - Postpartum Hemorrhage

Maternal Complications

- Organ dysfunction
  - acute renal failure.
    - elevated uric acid, creatinine & urea
    - glomerular capillary endotheliosis
  - hepatic hemorrhage and failure
    - elevated liver enzymes (ALT, AST), LDH.
  - Intracerebral hemorrhage
  - papilledema, retinal hemorrhage.
    - Blindness is rare
  - left ventricular failure
  - acute pulmonary edema

Maternal Complications

- Hematological & Coagulation defects
  - microangiopathic hemolytic anemia
  - low platelets (thrombocytopenia)
  - DIC.
  - HELLP syndrome:
- Death 1%

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Fetal Complications

- IUGR
- IUFD (10% in mild preeclampsia, 30% in severe preeclampsia)
- preterm labor (40%)

Diagnosis

- history
- mild cases: no symptoms
- severe cases:
  - headache,
  - blurring of vision,
  - scotomata
  - epigastric pain,
  - vomiting

Examination

- Hypertension
  - BP >140/90 mmhg
  - Sitting with the arm at the level of the heart
  - Korotkoff phase V for dBP
  - Suitable cuff size
- proteinuria:
  - more than 300 mg in a 24-hour specimen
    - (or more than 100 mg/dL on two random collections)
  - it is tested in a midstream sample of urine using paper strips
    - change color of tetrabromophenol blue into green.

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Examination

- pathological edema:
  - occult: weight >1 kg/week (internal organs, serous cavities)
  - Overt
- exaggerated deep tendon reflexes with sustained ankle clonus in severe preeclampsia

Investigations

- lab: biochemical changes, DIC, HELLP syndrome
- ultrasound: to detect
  - IUGR,
  - oligohydramnios,
  - abruption placentae
- fundus examination
- assessment of fetal well-being

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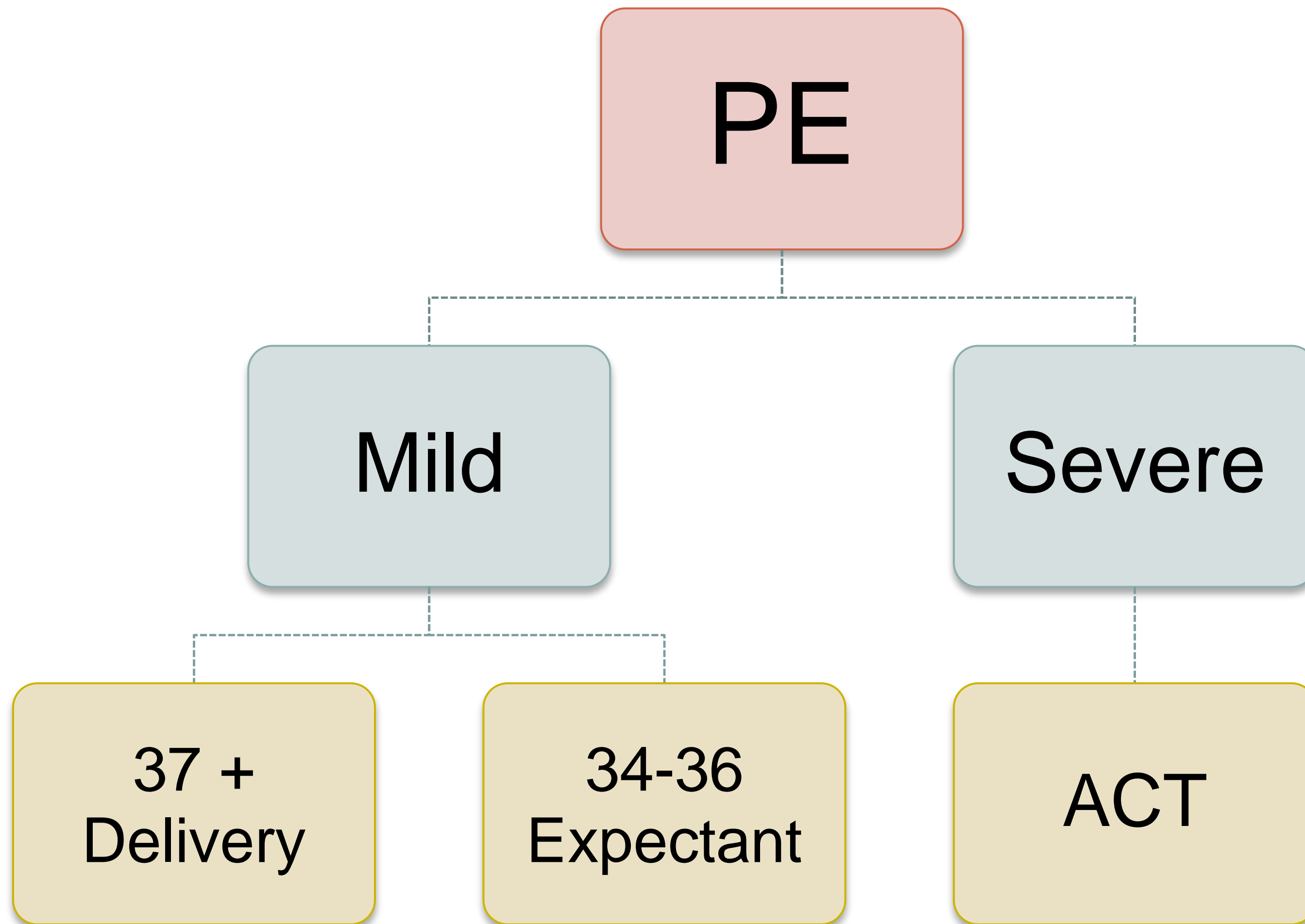
Severity: both are explosive

- Non-severe
- Severe (only 1% of cases):
  - blood pressure greater than 160/110 mm Hg,
  - proteinuria (>5 g/24 h),
  - oliguria (<500 mL/24 h),
  - elevated serum creatinine
  - pulmonary edema,
  - microangiopathic hemolysis,
  - thrombocytopenia,
  - hepatocellular dysfunction,
  - intrauterine growth restriction
  - symptoms (headache, scotomata, or epigastric pain)

Management algorithm



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PE before 34 weeks

- Is considered high risk
- Expectant management MAY BE considered in tertiary perinatal centers
- Antenatal corticosteroid therapy

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Treatment

- Prophylactic: proper antenatal care
- Mild preeclampsia
  - The patient may be hospitalized or, if reliable, may be instructed to follow up as an outpatient
  - fetal monitoring: weekly to twice weekly.
  - Planned delivery is indicated
    - at completed 37 weeks.
    - When the disease worsens to severe preeclampsia.
    - If there is any evidence of fetal compromise.

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Severe preeclampsia

- hospitalization
- **A**nticonvulsant prophylaxis against eclampsia: magnesium sulfate
- **C**ontrol BP: hydralazine, nifidipine, labetalol
- **T**herapy is delivery (delivery is the only cure to preeclampsia)

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Delivery

- induction of labor (How?)
- intrapartum fetal monitor
- Early epidural analgesia (in the absence of contraindications) is recommended
- NEVER use Ergometrine in the third stage
- CS: (epidural, spinal, CSE, general anesthesia)
  - failure of induction or unfavorable for induction
  - maternal distress
  - fetal distress
- care of newborn (LBW)

Eclampsia

- convulsions & coma preceded by preeclampsia
- occurs in 0.1% (an index of the level of ANC)
- occurs antepartum (65%), intrapartum (20%), postpartum (15%)
- Maternal mortality: up to 10%.
  - Cerebral hemorrhage is the commonest cause
- Perinatal mortality: 50%

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Diagnosis

- Hypertension with convulsions
- premonitory: 1-2 minutes before fits, severe headache, epigastric pain, vomiting, eyes rolled up, twitches of muscles of the face.
- tonic spasm of muscles for 30 seconds, cyanosis, episthotonus
- clonic spasm of muscles for 60 seconds, injury of tongue & lips, fractures, inhalation of blood & vomitus, incontinence of feces & urine
- after the fit the patient may be in coma or semiconscious. She may have other fits

Prognosis

- frequency and timing of fits: antepartum fits.
- depth and duration of coma
- absolute level of BP
- organ dysfunction: oliguria, abnormal kidney functions, HELPP

Antepartum fits are WORSE

	Antepartum	Intra & Post Partum
Seizure outside hospital	55 %	3 %
Multiple seizures	55 %	35 %
Major maternal complication	50 %	25 %
IUGR	45 %	20 %
Neonatal mortality	10 %	<1 %

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Treatment

- prophylactic: management of preeclampsia
- hospitalization
- A. C. T.
  - Anticonvulsant
  - Control blood pressure if BP is >160/110 mmHg
  - Therapy is delivery

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Hospitalization

- rapid transfer to hospital
  - on stretches in a left lateral position
  - With head down to avoid aspiration
  - suction of blood & vomitus
  - mouth gag to avoid injury of tongue
  - tongue forceps to avoid back-falling of tongue
- rapid admission
  - history from relatives
  - examination & immediate lab studies
  - special well qualified personnel
  - observation chart: fluid chart, BP, P, T, RR, UOP, reflexes, fits, level of consciousness, medications given

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Anticonvulsant

- magnesium sulfate.
- inhibits acetyl choline release at the NMJ.

Control blood pressure

- antihypertensive
- when DBP >110 mmHg

Therapy is delivery

- CS unless vaginal delivery is imminent.

Magnesium Sulfate: regimen

loading dose	maintenance dose
4 g slowly IV + 10 g IM (5 g in each buttocks).	5 g IM every 4 hours in alternate buttocks.
4 g slowly IV	1 g IV /hour

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Magnesium Sulfate: monitor

- lab: serum Mg level every hour
  - normal: 1.9-2.5 mEq/l
  - therapeutic: 4-7
  - loss of knee reflexes: 10
  - respiratory depression: 12
- clinical
  - UOP <30 ml/hour (parentral Mg is excreted totally in urine)
  - absent knee reflex (early sign of toxicity)
  - respiratory rate <12/min.
- antidote: Ca gluconate: 10 cc 10% slowly IV

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Antihypertensive drugs

Drug	Mechanism
Hydralazine	Direct vasodilator
Nifedipine	Calcium channel blocker
Labetalol	a1- and b1- blocker
Nitropeussside	Direct VD

Treat complications

- Care of the coma patient
- Blood loss:
  - patients with severe PE-E lacks normal hypervolemia
  - They are less tolerant to blood loss.
  - Blood loss should be treated by careful blood transfusion.
  - Immediate decrease of BP after labor often means blood loss & not sudden relief of vasospasm.

ALL THE BEST

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