Anaesthetic Considerations In Pregnancy Induced Hypertension
Contents

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- Chronic HTN
- Preeclampsia
- Eclampsia
- HELLP syndrome
- Conclusion
Introduction

- PIH encompasses a range of disorders collectively & formerly known as toxemia of pregnancy
- It includes gestational hypertension, preeclampsia, eclampsia & HELLP syndrome
- Seen in 6% to 8% of all pregnancies
- A major cause of obstetric & perinatal morbidity & mortality
- Contribute significantly to still birth, neonatal morbidity & mortality
Classification of hypertensive disorders of pregnancy

- Gestational HTN (6-7%)
- Preeclampsia
  - Mild (75%)
  - Severe (25%)
- HELLP syndrome
- Chronic hypertension preceding pregnancy
- Chronic HTN with superimposed preeclampsia

Acc to ACOG practise bulletin 2002
Gestational hypertension

- Transient HTN of BP > 140/90 without proteinuria or end-organ damage
- May occur late in pregnancy, during labor, or within 24 hrs postpartum
- BP returns to normal within 10 days postpartum
Chronic hypertension

- Begins prior to pregnancy
- BP > 140/90mmHg
- Not associated with proteinuria or end-organ damage
- Continues well after delivery (6wks)
## Definitions of Hypertensive Disorders in Pregnancy

<table>
<thead>
<tr>
<th>Type</th>
<th>Blood Pressure</th>
<th>Onset</th>
<th>Proteinuria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational hypertension</td>
<td>≥140/90</td>
<td>After mid-pregnancy</td>
<td>Absent</td>
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<tr>
<td>Preeclampsia</td>
<td>≥140/90</td>
<td>After 20 weeks gestation</td>
<td>&gt;300 mg/24 h</td>
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<tr>
<td>Preeclampsia with chronic hypertension</td>
<td>≥140/90</td>
<td>Before 20 weeks gestation/sudden increase</td>
<td>Sudden increase in proteinuria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in HTN</td>
<td></td>
</tr>
<tr>
<td>Chronic hypertension</td>
<td>≥140/90</td>
<td>Before 20 weeks gestation/without resolution PP</td>
<td>Absent</td>
</tr>
</tbody>
</table>
Preeclampsia

- Defined as HTN (> 140/90 mm Hg) occurring after 20 weeks’ gestation or in the early postpartum period & returning to normal within 3 months after delivery & at least one of the following:
  - Proteinuria > 300 mg/24 hr
  - Oliguria
  - Sr.- plasma creatinine ratio > 0.09 mmol/L
  - Headache with hyperreflexia or visual disturbances
  - ↑ liver enz, plasma Glut-S-transferase-α1-1 or RUQpain
  - Thrombocytopenia, ↑ LDH, hemolysis, DIC
  - IUGR
## Classification of Preeclampsia

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Mild</th>
<th>Severe</th>
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<tbody>
<tr>
<td>SBP</td>
<td>&lt; 160 mm Hg</td>
<td>&gt; 160 mm Hg</td>
</tr>
<tr>
<td>DBP</td>
<td>&lt; 110 mm Hg</td>
<td>&gt; 110 mm Hg</td>
</tr>
<tr>
<td>Urinary protein</td>
<td>&lt; 5 g/24 hrs, dipstick 1+,2+</td>
<td>&gt; 5 g/24 hrs, dipstick 3+,4+</td>
</tr>
<tr>
<td>U/O</td>
<td>&gt; 500 ml/24 hrs</td>
<td>&lt; 500 ml/24 hrs</td>
</tr>
<tr>
<td>Headache</td>
<td>A</td>
<td>P</td>
</tr>
<tr>
<td>Visual disturbances</td>
<td>B</td>
<td>R</td>
</tr>
<tr>
<td>Epigastric pain</td>
<td>S</td>
<td>E</td>
</tr>
<tr>
<td>RUQ abd pain</td>
<td>E</td>
<td>S</td>
</tr>
<tr>
<td>Pul oedema</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Cyanosis</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>HELLP syndrome</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>Platelet count</td>
<td>&gt; 1 lac/mm3</td>
<td>&lt; 1 lac/mm3</td>
</tr>
</tbody>
</table>
RISK FACTORS FOR PIH

Hypertensive ds
- Prev PIH
- Syst HTN during early preg
- H/O chr HTN
- Family h/o HTN during preg
- ↑Pulse pressure in 1st trimster

coexisting vasc & endothelial ds
- Chr renal ds
- SLE
- Protein S def
- Activated protein C resistance
- Circulating Anticardiolipin antibody

obstetric factors
- Nulliparity
- Age > 40 yrs
- H/O smoking
- Obesity
- Multiple gest, molar preg
- DM
- Polyhydramnios
Pathophysiology of PIH

- Possible mechanisms:
  - Abnormal placentation & failure of normal invasion of trophoblast cells leading to maladaptation of maternal spiral arteries
  - Disequilibrium in action of arachidonic acid metabolites, TXA2 & prostacyclins
  - Genetic – a preeclampsia gene with many modifier genes in conjunction with environmental factors have been implicated
  - ↑ Cytoplasmic Ca levels in response to angiotensin II
  - Altered handling of fatty acids by the liver
Pathophysiology of preeclampsia

Impaired extravillous cytotrophoblast invasion of spiral arteries

Stage 1

Impaired extravillous cytotrophoblast invasion of spiral arteries

Stage 2

Ischemic placenta

sFlt-1

Oxidative stress

Maternal endothelial dysfunction

Systemic inflammatory response

Clinical signs of preeclampsia

Hypertension  Edema  Clotting problems  Proteinuria  Eclampsia  HELLP
Pathophysiology of PIH

Failure of trophoblastic invasion of decidual arteriole in placental bed

Ischemia of placental bed

Immunological response

Release of TNFα, prod of free O2 radicals, activation of PMNs

Vascular circulating adhesins

Platelet adhesions

Release of toxins, MOD

Periodic degranulation
Preeclampsia

\[ \downarrow \text{Vasconstriction} \]
\[ \downarrow \text{Platelet aggregation} \]
\[ \downarrow \text{Uterine activity} \]
\[ \uparrow \text{Uteroplacental blood flow} \]

\[ \text{Prostacyclin} \]

\[ \downarrow \text{Vasconstriction} \]
\[ \downarrow \text{Platelet aggregation} \]
\[ \downarrow \text{Uterine activity} \]
\[ \downarrow \text{Uteroplacental blood flow} \]

\[ \text{Thromboxane} \]

\[ \text{Endoperoxide} \]

\[ \text{Arachidonic acid} \]

\[ \text{Preeclampsia} \]
Pathophysiological changes in PIH
THE CLASSIC TRIAD OF Preeclampsia

- Hypertension
- Proteinuria
- Oedema
Hallmarks of PIH

- Vasoconstriction
- Reduced blood volume
- Platelet aggregation
- Uteroplacental hypoperfusion
Organ system derangements in PIH

- **CVS**
  - Generalised vasospasm
  - ↑SVR
  - ↑CO
  - ↓CVP
  - ↑BP
  - ↓Blood vol → hemoconc.
  - ↑Response to adr & nor adr

- **Respiratory system**
  - Laryngopharyngeal oedema
  - Tongue swelling
  - Lung vol, capacities not altered
  - Maternal CoHb ↑, 2 3 DPG ↓ - left shift of ODC
  - Resp. depression – Mg 2+, narcotics / sedatives / hypoxia/ hypercarbia
  - Pulm Edema with LVF-injudicious fluid hydration
Organ system derangements in PIH

- **Renal**
  - ↓GFR
  - ↓RPF
  - ↓Uric acid clearance
  - Proteinuria, oliguria
  - ARF – Abruptio placentae, DIC, HELLP & superimposed essential HTN
  - Complete recovery of renal function is anticipated unless b/l renal cortical necrosis occurs

- **Hepatic**
  - ↑S. transaminase
  - Periportal necrosis
  - Subcapsular hematoma
  - Hepatic swelling – epigastric pain
Organ system derangements in PIH

**CNS**
- Cerebral oedema
- Cerebral haemorrhage
- Hyperexcitability
- ↑ ICP
- Visual disturbances – photophobia, diplopia, scotoma, blurring of vision

**Haematological**
- ↓ PV
- ↑ Bld viscosity
- ↑ Haematocrit
- Coagulopathy
- Thrombocytopenia
- Microangiopathic hemolysis
Organ system derangements in PIH

- **Endocrine system**
  - ↓Plasma renin
  - Suppression of RAA system
  - Imbalance b/w vasoconstrictors, vasodilators

- **Uteroplacental perfusion**
  - Uterus - hyperactive & ↑ sensitive to oxytocin
  - Rapid & preterm labor with painful contractions
  - Uteroplacental blood flow ↓- ↑vascular resistance & maternal blood viscosity
  - Small Placenta- premature aging, infarct, fibrin deposition, calcification & abruptio
Clinical presentation

Symptoms
- Oedema
- Headache
- ↓U.O.
- Epigastric pain
- Convulsions
- Blurring of vision – retinal vasospasm

Vascular endothelial damage
Extravasation of fluid
Interstitial hyperoncocity
Hemorrhagic gastritis, subcapsular hematoma
Hepatic rupture

Signs
- Weight gain > 2lbs/wk or > 6 lbs/mnth
- HTN
Prediction

1. Roll over test - ↑ >20mmHg of DBP when turned from left lateral position to supine position
2. MAP > 85mmHg during 20-28 weeks of gestation
3. Hypocalciuria
4. ↑Plasma homocysteine, S.sFlt 1; ↓placental growth factor, vascular endothelial growth factor
5. Uric acid levels > 5.9 mg/dl
6. Angiotensin II infusion test
7. ↓urinary kallikrein excretion
8. Doppler velocimetry studies of uterine arteries
Investigations

- Complete Hmg
- Urine - routine & microscopy
- Complete LFTs
- Complete RFTs (BUN, Sr. creatinine, uric acid)
- Sr. electrolytes
- RBS
- BT, CT, Coagulation profile (PT, INR, PTTK, FDPs, D-dimers, AT-3)
- Fundoscopy
- USG abdomen with doppler
- MRI/ CT brain
- Blood grouping & cross matching
Prevention

- Low dose aspirin
  (Comparative low dose aspirin study in pregnancy)
- Calcium supplementation
- Magnesium supplementation
- Fish oil supplementation
- Antioxidant use – vit C & E
- Ketanserin
T/t of Preeclampsia

- Salt restriction
- Adequate hydration
- Sedation
- Control of HTN
- Seizures prophylaxis with magnesium sulphate
- Delivery of fetus
ANTIHYPTERTENSIVE AGENTS

Antihypertensives

Acute therapy
- Hydralazine
- Labetalol
- Nifedipine
- Nitroglycerine
- Nitroprusside

Chronic therapy
- methyl dopa 250-500mg tds/qid
- Labetalol 2-10 mg/kg/day
- Nifedipine 0.8-1.2 mg/kg/day
<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Onset</th>
<th>Duration</th>
<th>S/E</th>
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</thead>
<tbody>
<tr>
<td>Hydralazine</td>
<td>5-10mg IV q 20 min</td>
<td>10-20 min</td>
<td>3-6hrs</td>
<td>↑HR, headache, flushing, ppt of angina</td>
</tr>
<tr>
<td>Labetalol</td>
<td>20-40mg IV q10min→1mg/kg infusion</td>
<td>10-20 min</td>
<td>3-6 hrs</td>
<td>Scalp tingling, vomiting, heart block</td>
</tr>
<tr>
<td>Nifedipine</td>
<td>10-20mg PO q 20-30min</td>
<td>10-15min</td>
<td>4-6hrs</td>
<td>Headache, ↑HR, synergistic interaction with MgSO4</td>
</tr>
<tr>
<td>SNP</td>
<td>0.25-0.5ug/kg/min IV</td>
<td>Immediate</td>
<td>1-2min</td>
<td>Nausea-vomiting, muscle twitching, TCN&amp;CN toxicity</td>
</tr>
<tr>
<td>NTG</td>
<td>5-100ug/min IV</td>
<td>2-5min</td>
<td>3-5min</td>
<td>Headache, methemoglobinemia, tachyphylaxis</td>
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</tbody>
</table>
Anticonvulsant agent
MgSO4

- Site of action - N-methyl-MD-aspartate receptors
- Beneficial effects –
  - Anticonvulsant
  - Vasodilatation - ↑UBF & RBF, ↓BP
  - Attenuation of vasopressor response
  - ↓ Platelet aggregation
  - Bronchodilatation
  - Tocolysis- improves uterine blood flow, antagonizes uterine hyperactivity
- Detrimental effects –
  - Increases sensitivity to DMR & NDMR
  - Postpartum uterine atony
  - Muscle weakness or apnea in the neonate
## Effects of Increasing Plasma Magnesium Levels

<table>
<thead>
<tr>
<th>Dose</th>
<th>Plasma Mg (mEq/L)</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5–2.0</td>
<td>Normal plasma level</td>
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<tr>
<td></td>
<td>4.0–8.0</td>
<td>Therapeutic range</td>
</tr>
<tr>
<td></td>
<td>5.0–10</td>
<td>ECG changes (↑PQ intv, QRSwidening)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Loss of DTR</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>SA &amp; AV block, Respiratory paralysis</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td><strong>Cardiac arrest</strong></td>
</tr>
</tbody>
</table>
- C/I: (1) absent / v.sluggish knee jerk
  (2) RR < 16/min
  (3) U/O < 100ml in the preceding 4 hours (25ml/hr)

- T/t of Mg toxicity - Stop infusion
  - O2 supplementation
  - Sr. Mg levels monitored
  - 10ml 10%Cagluconate slow iv
  - Resp.Distress - intubation & CV
Other drugs used in PIH

- Furosemide 20-40 mg IV
- 20% Mannitol 0.5mg/kg
- Dexamethasone 10 mg BD
- Plasma expanders
Indications for delivery in preeclampsia

- **Maternal indications**
  - Gestational age $\geq 38$ wks
  - Platelet count $\leq 100,000$ cells /mm$^3$
  - Deteriorating liver & renal fn
  - Abruptio placentae
  - Persistent severe headaches or visual changes
  - Persistent severe epigastric pain or nausea-vomiting

- **Fetal indications**
  - Severe fetal growth restriction
  - Nonreassuring results from fetal testing
  - Oligohydramnios
MANAGEMENT

- Definitive treatment for Preeclampsia is delivery of the fetus & placenta
- Vaginal Delivery – Lumbar epidural analgesia
  - No fetal distress
  - Before catheter placement, r/o coagulopathy & ensure adequate vol replacement
- Cesarean Delivery
  - RA
  - GA
  - if fetal distress occurs
  - Use epidural if in place
  - SAB
Pre-anesthetic Evaluation

- **Assessment of target organ-system involvement**
  1. CVS: HTN control, LV fn, intravascular depletion
  2. Renal: degree of oliguria, hematuria, creatinine level
  3. Liver: LFTs, signs of liver capsule stretching
  4. Coagulation profile: platelet count, PT, PTT
  5. Airway examination: degree of laryngeal edema

- **Anesthetic risk factors**
  1. Poorly controlled HTN
  2. >2+ urinary protein
  3. ↓ Sr. uric acid
  4. Thrombocytopenia < 75,000
  5. Central vascular vol depletion
  6. Ass. chronic HTN & IDDM
Preanesthetic Assessment

- Particular attention - to airway assessment.

- Facial edema/stridor - indicates airway edema & difficult intubation.

- Preeclamptic pts - hypovolemic & prone to hypotension with neuraxial anesthesia.

- They are also at risk of pulm. edema; thus, judicious hydration is indicated.

- A 500- to 1000-mL crystalloid preload is appropriate before neuroaxial block.
- ↑ hematocrit suggests hypovolemia

- Platelet count < 70,000/mm³ - ↑ risk of epidural hematoma

- A test of platelet fn is useful in such pts

- LFTs, BUN & creatinine - determines severity of preeclampsia or in identifying +nce of HELLP syndrome

- ABG & CXR - indicated if there are s/s of pulm. edema
Goals of the anesthesiologist

1. Control CNS irritability – MgSO4 ↓es irritability of NM jn

2. Restore intravascular fluid volume - monitor U/O
   - CVP monitor with goal 4-6 cmH20

3. Normalize BP – MgSO4
   - Labetolol, Hydralazine, nifedipine, SNP

4. Correct coagulation abnormalities - Platelets, FFP, Cryoprecipitate
Monitoring

- HR and cont ECG
- BP & MAP
- Pulse Oximetry
- RR
- Knee jerks
- Urine output
- Level of consciousness
- Fetal heart rate and partogram
- CVP monitoring
Invasive Monitoring

- CVP catheter/ PICC

- IBP  - Sustained DBP > 90 mm Hg
  - Use of IV vasodilators (SNP, NTG)
  - Ind. of anesthesia with potential rapid BP fluctuations

- PAC  – Severe HTN unresponsive to t/t
  - Severe pulm edema
  - Oliguria unresponsive to fluid challenge
Labor Analgesia

- Epidural analgesia
  - Preferred technique
  - Facilitates BP control in labor
  - Improves uteroplacental performance & fetal well-being
  - Early epidural placement can be used for CS, thus avoiding the risks of GA

- Technique
  - Cont. infusions of LA sol. combined with an opioid
  - Avoid add. of adr d/t hypersensitivity of maternal vasculature to catecholamines
Regional Anesthesia for Preeclamptic Patient

- Advantages of epidural anesthesia
  - Blunts hormonal & hemodynamic responses
  - Provides better hemodynamic stability
  - ↑es renal & uteroplacental bld flow
  - ↓es potential for seizures
- Spinal anesthesia
  - Growing evidence of safety in preeclampsia
  - Less hemodynamic stability (?)
  - Less potential for hematoma
- CSE – 1.25-2.5 mg bupivacaine or 20-25 ug fentanyl intrathecally followed by epidural infusion
Spinal Anaesthesia

- Traditionally been discouraged because of risk of severe hypotension
- However, in pts with severe PIH, the magnitude of maternal BP ↓es are similar following either spinal or epidural anesthesia for CS
- Adq. IV hydration before performing SAB is essential
- T4 sensory level is needed for CS

If SBP ↓es > 30% of preblock value, T/t should consist of
- Lt uterine displacement
- ↑ rate of fluid infusion
- small dose of ephedrine (5 mg IV) or phenylephrine (100 µg IV)

Anesthetic requirements are ↓ed in parturients
- Inj. bupivacaine (12–15 mg) is adq. to achieve T4 sensory level & 120 min of anesthesia
- Fentanyl (10-15mcg) can be added.
General Anesthesia for Preeclamptic Patient

- Indications:
  - Coagulopathy
  - Acute fetal distress
  - Pt refusal
  - Failure of RA

- Risks of GA:
  - Aspiration
  - Airway compromise
  - Cerebral haemorrhage
  - Pulm oedema
Problems

- Airway edema
- Difficult intubation
- Hypertensive response at Induction, intubation & extubation
- HTN & tachycardia can lead to ↑ed ICP
- Interaction of anesthetic agents with MgSO4

Preparation for difficult intubation tray
Preoperative control of HTN
General Anesthesia for Preeclamptic Pt contd.

- Attenuation of pressor response by –
  - Hydralazine (5–10 mg IV over 10–15 min before induction)
  - Labetalol (10–20 mg IV 5–10 min before induction)
  - NTG (1–2 μg/kg IV just before initiating direct laryngoscopy)
  - Fentanyl (2-3 mcg/kg IV 3-4 min before laryngoscopy)
  - Lidocaine (1.5 mg/kg IV before laryngoscopy)

- RSI with sellick’s manouvre
- Relaxants should be used in minimal doses if MgSO4 is given
- Isoflurane is used for maintainance
- NTG spray or i.v lidocaine given just prior to extubation to attenuate extubation response
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Regional</th>
<th>General</th>
</tr>
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<tbody>
<tr>
<td>Airway</td>
<td>No intubation response</td>
<td>↑ intubation response</td>
</tr>
<tr>
<td></td>
<td>No failed intubation</td>
<td>↑risk of failed intubation</td>
</tr>
<tr>
<td></td>
<td>No sedative</td>
<td></td>
</tr>
<tr>
<td>Drug / technique</td>
<td>Risk of high block</td>
<td>Maternal awareness</td>
</tr>
<tr>
<td>Speed of induction</td>
<td>Spinal -5-10 min</td>
<td>Fetal depression</td>
</tr>
<tr>
<td></td>
<td>Epidural-20-30 min</td>
<td>Fast&lt;5 min</td>
</tr>
<tr>
<td></td>
<td>↓catecholamine</td>
<td>↑ catecholamine</td>
</tr>
<tr>
<td>BP control</td>
<td>Less ↓ BP- epidural</td>
<td>↑BP ,PAWP , CVP</td>
</tr>
<tr>
<td>Coagulation</td>
<td>Risk of epidural hematoma improves</td>
<td>Risk of Airway h’age</td>
</tr>
<tr>
<td>Uteroplacental circulation</td>
<td></td>
<td>impaired</td>
</tr>
</tbody>
</table>
Postpartum care

- Analgesia- 2.5 to 3 mg morphine epidurally
- Strict intake output charting- 24 hrs/ diuresis develops
- Continue MgSo4 – 24 hrs
- Reinstitute antihypertensive therapy to avoid rebound hypertension
- Careful monitoring for evidence of pulmonary congestion
HELLP Syndrome

- Seen in 20% of parturients who develop severe preeclampsia
- Hemolysis, ↑ liver enz & low platelet counts
- Clinical s/s – HTN
  - Proteinuria
  - Epigastric pain
  - Upper abdominal tenderness
  - Nausea and vomiting
  - Jaundice
- Complications - pulmonary oedema
  - pleural effusion
  - cerebral edema
  - hematuria, oliguria, ATN
  - panhypopituitarism
- DIC is most dangerous complication
- Maternal & perinatal mortality is ↑sed
- Lab diagnosis - Sr. Bilirubin > 1.2 mg/dl
  - Abnormal PS showing burr cells schistocytes
  - Sr. LDH > 600 u/l.
  - Aspartate aminotransferase >70 u/l
  - Platelet count < 1 lakh
T/t
- Delivery of fetus
  - PRC, FFP, Cryoppt adm.
  - Maintain adequate fluid status (CVP 4-6) & U/O @ 1ml/kg/hr

- Patients who undergo cesarean section should be transfused if their platelet count is less than 50,000 per mm3 (50 × 10^9 per L)

- Insertion of an epidural catheter is generally safe in patients with a platelet count greater than 100,000 per mm3 (100 × 10^9 per L), normal coagulation studies and a normal bleeding time.
## Comparison of Risk Factors for HELLP Syndrome and Preeclampsia

<table>
<thead>
<tr>
<th>HELLP Syndrome</th>
<th>Preeclampsia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiparous</td>
<td>Nulliparous</td>
</tr>
<tr>
<td>Maternal age &gt; 25 yrs</td>
<td>Maternal age &lt; 20 / &gt; 45 yrs</td>
</tr>
<tr>
<td>White race</td>
<td>Family h/o preeclampsia</td>
</tr>
<tr>
<td>h/o poor pregnancy outcome</td>
<td>Minimal prenatal care</td>
</tr>
</tbody>
</table>
Eclampsia

- Preeclampsia accompanied by grandmal convulsion not related to cerebral conditions
- Incidence – Ante partum – 50%
  Intrapartum- 25%
  Postpartum- 15%
- Pathogenesis - Cerebral vasospasm, ischemia, Hemorrhage
  - HTNsive encephalopathy
  - DIC
- Premonitory - Transient visual disturbances
  - Headache
  - Epigastric/ RUQ pain
Differential diagnosis

Not considered until eclampsia is ruled out
1. Epilepsy
2. Encephalitis
3. Meningitis
4. CVA
5. Cerebral tumors
Course of seizure

- Self limiting- 1-2 min
- Abrupt onset-tonic clonic
- Abnormal fetal HR pattern-
  - Bradycardia
  - ↓variability
  - Late deceleration
  - Reflex tachycardia
  - Resolve – 5 min of cessation of seizure
Management of Eclampsia

- Control seizures & protect the pt from aspiration pneumonitis
- Anticonvulsants - Thiopental 2-3 mg/kg IV
  - Diazepam 0.02 -0.2 mg/kg IV
  - Midazolam 0.03-0.05 mg/kg IV
  - MgSO4 4gms IV loading followed by IV infusion @1-2 gm/hr
- Airway support - oral or nasopharyngeal airway, suction, 100% O2
- Endotracheal intubation - if seizures are not controllable & risk of aspiration is high
Delivery in eclampsia

- Vaginal
- LSCS for obstetric indication only
- MgSO4 throughout labor & postpartum-24hrs
Causes of mortality in PIH

- Intracranial haemorrhage is the leading cause.
- Congestive heart failure with pulmonary edema
- Aspiration pneumonitis
- Postpartum haemorrhage
- DIC
- Acute renal failure
- Ruptured liver in HELLP
- Septic shock
- ARDS & ventilator associated pneumonia
Conclusion

- Preeclampsia is a fairly common multisystem disorder
- Ass. with high maternal & perinatal morbidity & mortality
- Magnesium sulfate remains the mainstay of seizure prophylaxis
- Magnesium sulfate administration does not reduce overall perinatal morbidity & mortality, it may ↑ risk of maternal respiratory depression
Spinal block could be a safe anesthetic choice for women with severe preeclampsia having a cesarean delivery if patient has no c/i to neuraxial block

Imp steps in anesthesia management
- Close communication with obstetrical colleagues
- Early & detailed preop assessment & plan
- Meticulous monitoring, including invasive monitors if indicated
- Utilization of advantages of RA when appropriate
- Close postoperative follow-up
Thank you