MANAGEMENT OF PREECLAMPSIA & HELLP

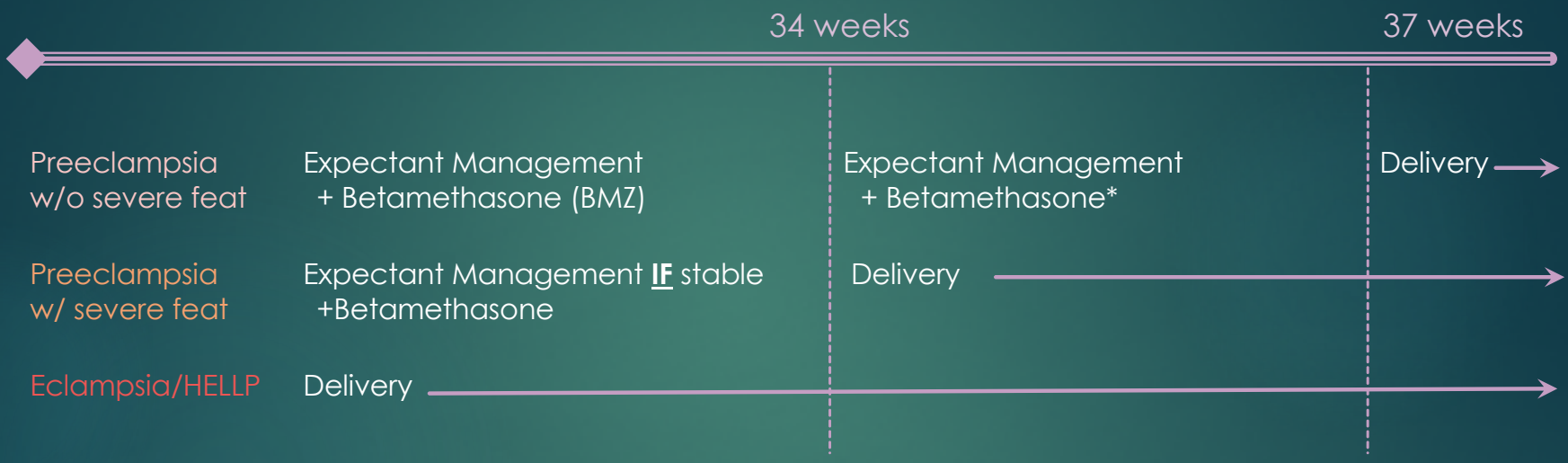
FLAME LECTURE: 105

BURNS/SISTO 11.15.17

LEARNING OBJECTIVES

- Explain the management of a patient with preeclampsia
- List the maternal and fetal complications associated with preeclampsia
- See also:
  - FLAME 27 – CHRONIC HTN IN PREGNANCY
  - FLAME 104 – DIAGNOSING PREECLAMPSIA
  - FLAME 106 – ECLAMPSIA

QUICK OVERVIEW OF TREATMENT



- Preeclampsia management involves balancing the benefits of continuing the pregnancy for fetal development versus taking on risks of continued HTN and endothelial dysfunction to maternal/fetal health

*Should be offered if no contraindications to BMZ (Gyamfi-Bannerman 2016)

PRE-E W/O SEVERE FEATURES

(Previously known as Mild Preeclampsia)

- Preeclampsia is only "cured" via delivery of placenta, but timing of delivery is balanced between risk of fetal prematurity with expedited delivery and risk to mother/fetus with waiting in the setting of continued preeclampsia
- General overview (detailed slides to follow):
  - ≥37 weeks + no severe features = Delivery
    - Not a contraindication to labor induction and/or vaginal delivery
  - <37 weeks + no severe features = Expectant management
    - Evidence to support both inpatient and close outpatient mgmt; decision should be individualized and made with the patient
    - *Blood pressures*: as long as BP <160/110, no anti-hypertensives rec'd
    - *Seizure prophylaxis*: no universal recommendation if BPs <160/110
    - *Labs*: LFTs and platelets weekly OR PRN worsening pressures/symptoms
      - Note, no need to recheck urine protein, because we do not make delivery decisions or escalate to a diagnosis of severe features based off this parameter
    - *Antepartum measures*: Twice weekly NSTs, BMZ given to promote fetal lung maturity

PRE-E W/ SEVERE FEATURES

(Previously known as Severe Preeclampsia)

- Preeclampsia with severe features is preeclampsia with signs of end organ damage, or if blood pressures escalate to >160/110
  - ≥34 weeks + severe features = Mag + Delivery
    - Not a contraindication to labor induction and/or vaginal delivery, UNLESS rapidly worsening status for which the risks of waiting for induction are deemed to outweigh the risks of outright cesarean section
  - <34 weeks + severe features = Expectant management
    - Inpatient until delivery
    - *Blood pressures*: Target 130-150 / 80-100; oral or IV meds to achieve this goal
    - *Seizure prophylaxis*: magnesium sulfate x 24 hours upon admission AND/OR during delivery and postpartum
    - *Labs*: LFTs and platelets daily OR PRN worsening pressures/symptoms
    - *Antepartum measures*: Daily NSTs, Betamethasone given to promote fetal lung maturity
  - If severe features develop before viability = Delivery

PRE-E W/ SEVERE FEATURES

Delivery planning

Give BMZ and deliver*:
> 34 weeks gestation
Persistent symptoms of severe preeclampsia
HELLP syndrome present
IUGR (especially with reversed end-diastolic flow on umbilical artery Doppler)
Severe oligohydramnios
Labor or PROM
Significant renal dysfunction

*Can delay delivery by 48 hours to get BMZ on board if stable, however….

Give BMZ and deliver IMMEDIATELY once stable if:
Eclampsia
Pulmonary Edema
DIC
Severe uncontrollable hypertension
Nonviable fetus
Unstable fetal heart tracing
Placental abruption
IUFD

Give BMZ and expectantly manage if:
< 34 weeks gestation
Admit to hospital: • MgSO4 x 24 hours upon admission and during labor • Twice weekly NSTs • Oral anti-hypertensives if BP >150/100 • Deliver once >34 weeks or PRN if worsening pressures, labs, or symptoms

ANTEPARTUM MANAGEMENT

- In patients being expectantly managed:
  - Expectant management usually occurs in the hospital, even for patients without severe features, because severity can change rapidly
  - Regular monitoring includes:

Daily	Twice a week	Weekly	Every 3-4 weeks
Blood Pressure NST	Labs Q 3-4 d: ▪ CBC ▪ Liver enzymes ▪ Creatinine Uterine Artery Doppler if IUGR	AFI	Fetal ultrasound to assess fetal growth

  - Betamethasone given if patient is <37 weeks to accelerate fetal lung maturity

BLOOD PRESSURE MANAGEMENT

- **No severe features:** No medication if BPs <160/110
  - Tight blood pressure control does not affect the progression of preeclampsia
- **Severe features:**
  - If > 160/110, initiate acute hypertensive control algorithm until < 160/110:
- Initial first line management with **Labetalol**:

20mg IV over 2 mins → Check BP in 10-15 mins → 40mg IV over 2 mins → Check BP in 10-15 mins → 80mg IV over 2 mins → Check BP in 10-15 mins → *Consider switch to Hydralazine if still > 160/110

- Initial first line management with **Hydralazine**:

5-10mg IV over 2 mins → Check BP in 20 mins → 10mg IV over 2 mins → Check BP in 20 mins → 10mg IV over 2mins → Check BP in 20 mins → *Consider switch to Labetalol if still > 160/110

- *Max dose of IV Labetalol is 300mg (20 + 40 + 80 + 80 + 80mg) in one setting; Max dose of hydralazine is 30mg in one setting
- Until IV is available, 10mg oral Nifedipine up to five doses can lower blood pressure as quickly as IV labetalol in hypertensive emergencies (Shekhar 2013)

SEIZURE PROPHYLAXIS

- **Magnesium sulfate** given for seizure prophylaxis as well as seizure control if eclampsia develops
  - Expectant mgmt: Give $MgSO_4$ x 24 hours upon admission + intrapartum through 24 hrs postpartum
  - If admitting and delivering: most pts will likely be on $MgSO_4$ from admission until 24 hrs postpartum
  - Exact mechanism of seizure prevention/treatment is unknown but $MgSO_4$ has been found superior to all other anticonvulsant medications for preeclampsia seizure mgmt

$MgSO_4$ effects at varying serum concentration (mg/mL)	
4.8-8.4	Therapeutic dose
7-10	Hyporeflexia
10-13	Respiratory distress/paralysis
15+	AV block
17+	Coma
25+	Cardiac arrest
MgSO4 toxicity treatment: Calcium Gluconate	

- If patients are on magnesium, clinical examinations and/or labs should be checked serially to prevent magnesium toxicity
  - If clinical: check DTRs, auscultate lungs, and measure I&Os q1-2 hours
  - If labs: check serum magnesium level q6 hours

POSTPARTUM MANAGEMENT

- **Delivery of placenta is curative for preeclampsia/eclampsia**
- While more rare, pre-eclampsia can worsen (or even present) for up to 6 weeks postpartum
  - Continue $MgSO_4$ x 24 hours postpartum
  - Continue BP monitoring in the hospital (or that of equivalent surveillance as an outpatient) for at least 72 hours postpartum
    - If blood pressure remains elevated >160/110 x2 on either of these occasions, antihypertensive therapy should be started
  - Patient should have BP follow up again at 7-10 days after delivery or earlier in women with symptoms
- Be cautious with NSAIDs postpartum until hypertension, oliguria, and renal function improve or resolve

COMPLICATIONS

- Recurrence
  - 20% of women have hypertension in subsequent pregnancy
  - 16% have recurrent preeclampsia
    - Risk increases with earlier preeclampsia onset or more severe symptoms
- **Maternal Complications** – more likely to later develop:
  - Cardiovascular disease (Hypertension, Ischemic heart disease, Stroke, VTE)
    - 17.8% absolute risk of developing one of the above events (8.3% without preeclampsia)
    - 8-10x more likely to die of cardiovascular disease
  - Diabetes mellitus
  - ESRD – though renal function usually recovers fully initially after preeclampsia resolution
- **Obstetric complications**
  - IUGR
  - Placental abruption
  - Labor induction, c-section delivery
- **Fetal Complications**
  - Small for gestational age & preterm birth
  - Respiratory distress, Brain hemorrhage
  - 30% had below normal/abnormal IQ (Pre-eclampsia Eclampsia Trial Amsterdam)

HELLP Syndrome Management

- Recall: HELLP Syndrome (Hemolysis, Elevated Liver, Low Platelets) is a complication of preeclampsia that can also occur independent of preeclampsia
- Managed similarly to preeclampsia with severe features
  - Closely monitor hemolytic status
  - *Before viability or > 34 weeks*: delivery
  - *Viability to 34 weeks*: expectant management for 24-48 hours to give time for betamethasone to take effect unless worsening maternal/fetal status
  - *Mother or fetus in unstable condition*: delivery
  - Give $MgSO_4$ from diagnosis until 24 hrs postpartum
  - Manage hypertension

FUTURE CONSIDERATIONS

- With future pregnancies
  - Recommend preconception counseling and assessment for all women with a history of preeclampsia
  - For women with a history of early-onset pre-e <34 weeks, or pre-e at any gestation in more than one pregnancy, recommend starting 81mg ASA in late first trimester
- Future surveillance
  - In women who have had pre-e <37 weeks or recurrent pre-e, recommend annual BP checks, lipids, fasting blood glucose, and BMI

REFERENCES & RESOURCES

- Hypertension in Pregnancy: Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. Obstet Gynecol, Nov 2013; 122(5):1122-1131.
- UpToDate:
  - Preeclampsia: Management and Prognosis
  - Eclampsia
  - Expectant management of preeclampsia with severe features
  - Management of hypertension in pregnant and postpartum women
- Uzan J, Carbonnel M, Piconne O, Asmar R, Ayoubi J-M. Pre-eclampsia: pathophysiology, diagnosis, and management. *Vascular Health and Risk Management. 2011;7:467-474* doi:10.2147/VHRM.S20181.
- Callahan, TL, Caughey, AB. *Blueprints Obstetrics & Gynecology*. Philadelphia: Wolters Kluwer Health/Lippincott William & Wilkins, 2009. 6th ed.
- Shekhar, S. et al. Oral Nifedipine or intravenous Labetalol for hypertensive emergency in pregnancy. Obstet Gynecol 2013;122:1057–63. DOI: 10.1097/AOG.0b013e3182a9ea68