Pre-Eclampsia, Eclampsia, Postpartum Hemorrhage and Postpartum Care

Mini-ALSO - PGY-1 Orientation
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Key Points

Pre-Eclampsia

1. Who is at risk? Can we prevent it?
2. Recognition and Diagnosis: **without** or **with** severe features
3. Management: treating BP, preventing eclampsia, protecting the fetus

Eclampsia

1. Management: ABCs, stopping the seizure, controlling BP, resuscitating the fetus
Key Points

Postpartum Hemorrhage

1. Who is at risk?
2. Diagnosis and differential diagnosis: criteria and causes (4Ts)
3. Management: in-room maneuvers, meds, operations

Postpartum Care

1. Routine components: perineal care, lochia, pain, breast issues, mood
2. Complications: bleeding, DVT, breast complications, C/S care
Mentally prepare for the worst in every delivery.
A 22-year-old G1P0 woman at 34 2/7 presents to the labor deck complaining of severe headache. No N/V, visual changes or abdominal pain. On exam, her BP is 145/98 mmHg (baseline in the chart is 110/60 mmHg), other VS normal. Physical exam is unremarkable, FH is 34cm. FHTs are 140. No vaginal bleeding, LOF or contractions. What further information will you need to establish the diagnosis of preeclampsia?

A. Nothing else is needed.
B. Repeat BP in four hours.
C. Urinalysis.
D. Presence or absence of edema.
E. B and C.
F. B, C and D.
Risks and Prevention

Key risk factors:

● APLA syndrome
● History of preeclampsia
● Family history of preeclampsia
● Preexisting diabetes
● Multiple gestation
● Nulliparity

Prevention:

Low dose ASA (81mg) daily recommended for:

● women with multifetal pregnancies
● chronic hypertension
● type 1 or 2 diabetes mellitus
● renal disease
● autoimmune diseases
● several moderate risk factors.

(USPSTF guidelines - ACOG differs)

HDP are the second leading cause of maternal mortality. Two to eight percent of pregnancies are affected by pre-eclampsia.
Hypertensive Disorders of Pregnancy

Chronic hypertension
Prior to pregnancy

Gestational hypertension
20 wks

Preeclampsia

HELLP syndrome

One can have preeclampsia superimposed on chronic hypertension!
Preeclampsia (without severe features)

Definition:

- **Blood pressure** $\geq 140/90$ mmHg (on two occasions four hours apart in the same arm)
- **Proteinuria**
  - $\geq 0.3$ g in 24 hours (300mg) or
  - $\geq 1+$ proteinuria on dipstick or
  - $\geq 30$ mg/mmol Cr on spot urine prot:Cr
- Edema is NO LONGER a required diagnostic criterion

- What if no proteinuria?
  - Still preeclampsia if high BP and *any* of: elevated LFTs, low plts, new renal insufficiency, pulmonary edema or new cerebral/visual disturbances
Your 22-year-old G1PO patient at 34 2/7 weeks gestation has a BP of 162/111 mmHg on recheck. She now has a headache. Her labs return, showing platelets of 62,000 and her transaminases are 3x the upper limit of normal. What would be the most appropriate next steps?

1. Give MgSO4 in a 4 gram IV bolus followed by a 2 g/h infusion.
2. Consider anti-hypertensive treatment with labetalol or nifedipine.
3. Begin induction of labor if the cervix if favorable, or consult OB for C-section if not.
4. Numbers 1 and 2 only.
5. Numbers 1 and 3 only.
6. All of the above.
Preeclampsia with severe features

Severe preeclampsia if ANY of:

- blood pressure $\geq 160/110$ mm Hg (only a single measurement required)
- thrombocytopenia ($< 100,000$ platelets/mcL)
- impaired liver function indicated by $\geq 1$ of the following
  - elevated serum liver transaminases to twice upper limit of normal
  - severe, persistent RUQ or epigastric pain refractory to medication and not accounted for by alternative diagnosis
- progressive renal insufficiency (creatinine $> 1.1$ mg/dL or doubling of serum creatinine in patient without other renal disease)
- pulmonary edema
- new onset cerebral or visual disturbances, including headache

These are indications for immediate delivery via induction or C/S.
When might my patient have preeclampsia SUPERIMPOSED on her chronic hypertension?

- Hypertensive women who suddenly develop proteinuria after 20 weeks gestation.

- Women with proteinuria before 20 weeks gestation who:
  - suddenly need an escalation in antihypertensive therapy
  - liver enzymes bump
  - platelets drop (<100,000)
  - new RUQ pain
  - new HAs
  - new pulmonary edema
  - sudden bump in Cr (doubling or Cr >1.1)

The take-home: be aware that she can have BOTH, and monitor closely!
Up on the Deck:

• Preeclampsia *without* severe features can be followed-up *outpatient* with biweekly fetal monitoring.

• Preeclampsia *with* severe features (or HELLP) should be *admitted* for delivery ASAP.
Pre-eclampsia Treatment

Delivery if:
• Term gestation
• Gestation > 34 weeks with maternal or fetal distress
• Severe preeclampsia or HELLP regardless of gestational age

Attempt vaginal delivery unless other indications for C/S

Antihypertensives: labetalol, nifedipine or hydralazine
• For acute control of severe HTN or mgmt of chronic HTN

Magnesium:
• 4 g IV load, then 2 g/hour typical
• Not an antihypertensive – prevents progression to eclampsia
The MAGPIE trial: Mg for preventing seizures in pre-eclampsia


Multicenter, international RCT of 10,141 women, randomized to magnesium sulfate or placebo. MgSO4 dose was 4g load IV over 10-15 min followed by maintenance infusion of 1g/h over 24 hours.

Primary outcomes: eclampsia and neonatal mortality.

Results: MgSO4 lowered the risk of eclampsia by 58% and lowered maternal mortality without increasing risk of newborn death. No differences in maternal morbidity. Two year follow-up showed no excess risk of death or disability in mothers or infants with use of MgSO4.
You are paged stat to the room of your 22-year-old G1PO patient. She is seizing when you enter the room. Which of the following would be your first priority?

1. Give 5mg diazepam rectally.
2. Give 5mg diazepam intravenously.
3. Stay calm. Ensure her airway is patent, that she has O2, IV access and a monitor on.
4. Give magnesium sulfate 6 gram IV bolus over 15-20 minutes.
5. Numbers 1, 3 and 4.
6. Numbers 3 and 4 only.
7. All of the above are equally priority.
Eclampsia

Where there is chaos, spread calm. ABCs, O2, IV, monitor.

Magnesium is the anti-epileptic of choice in a pregnant women presenting with seizures: 6 g IV bolus over 15-20 min, then 2 g/hour IV. Alternative: 5g in each buttock IM.

- superior to diazepam and phenytoin for preventing recurrent seizures

Cochrane Database Syst Rev 2010 Dec 8;(12):CD000127

May be preceded by signs of neurologic irritability: scotomata, headache, hyperreflexia, apprehension – but may have no warning.

And can also occur up to several WEEKS after delivery – though the majority occur up to 48 hours post-partum.
KEY POINTS ABOUT PRE-ECLAMPSIA AND ECLAMPSIA

1. Know the definition of severe features: BP ≥ 160/100 or end-organ damage (liver, lung, marrow, brain, kidneys).
2. Delivery is the treatment for pre-eclampsia. Delivery is indicated regardless of gestational age for pre-eclampsia with severe features - vaginal route preferred.
3. Magnesium prevents seizures. Four gram IV load then 2g/h maintenance.
4. Anti-hypertensives also used: hydralazine, labetalol, nifedipine - lower BP by 10-20% at most.
5. Eclampsia: Re-bolus MgSO4, ABCs.
After you gain control of her eclampsia, your patient’s cervix is complete and the baby is crowning! You delivery a viable newborn with Apgars of 5 and 7, which is handed off to the neonatal team. Turning your attention back to mom, you notice a brisk flow of vaginal bleeding and passage of two softball-sized clots with uterine massage. Which of the following would be your first priority?

1. Grab lunch and maybe a coffee.
2. Give 4 units of FFP and screen for von Willebrand’s disease.
3. If not already done, get two large-bore IVs, start a NS or LR bolus, place the patient in Trendelenburg position, and place a Foley catheter.
4. Have your nurse call the blood bank for two units O neg blood and to type and cross for 2-4 type-specific units.
5. Call your attending (if not present) and for obstetrical backup.
6. Numbers 3, 4 and 5 are all priority.
Risk Factors for PPH

There are NO risk factors in 20% (1 in 5) of PPH cases. Mentally rehearse in every delivery!

Risk factors: Think about a big, floppy, tired uterus.

- Prolonged natural or augmented labor
- Prior history of PPH
- Grand multiparity
- Multifetal gestation
- Preeclampsia
- Maternal obesity
Causes of PPH – The Four Ts

1. Tone
   a. Uterine atony - cause of 70% of PPH
   b. DDx: macrosomia, multiple gestation, prolonged labor, infection, others.

2. Trauma
   a. Trauma (or anatomic disruption) - cause of 20% of PPH
   b. Cervical laceration, vaginal hematoma, uterine inversion or rupture.

3. Tissue
   a. Retained products of conception - cause of 10% of PPH.
   b. Retained placenta or placenta accreta/percreta.

4. Thrombin
   a. Clotting disorder - cause of <1% of PPH.
   b. Hereditary (eg, vWd) or acquired (eg, hemorrhagic coagulopathy).
What to do for PPH

1. Do not delay the diagnosis. Better to call it and be wrong than wait too long.
2. ABCs, O2, IV, monitor. This is like a trauma - call for help, two large-bore IVs, IVF bolus, type and cross blood (O neg first, 2-4 type-specific units ASAP), Trendelenburg, Foley.
3. ADDRESS TONE FIRST:
   a. Aggressive bimanual massage
   b. Oxytocin 10 IU IM or 20 IU/L at 250 mL/h, continued for 24 hours
   c. Other meds (next slide).
4. ADDRESS TRAUMA SECOND:
   a. Good lighting and extra hands
   b. Thorough inspection of the vaginal walls and cervix
5. ADDRESS TISSUE THIRD:
   a. Sweep uterine lining with moist gauze, feel for “smooth” spots or any defects
Medications for PPH

1. **Oxytocin**
   a. 20 IU per liter NS, given at 250 mL/hour (max 500 mL over 10 mins)
   b. Single most effective drug - first-line agent

2. **Methergine**
   a. 0.2 mg IM q 2-4 hours
   b. Relative contraindication: hypertension

3. **15-methyl-PGF2-alfa (Hemabate)**
   a. 0.25 mg IM q 15 mins to maximum of 2 mg
   b. Relative contraindication: asthma

4. **Misoprostol (Cytotec)**
   a. 1000 mcg PR or 400 mcg PR after placenta delivered then 100 mcg at 4 and 8 hours.
   b. Often used second-line; can also be given PO
What if first-line measures are not working?

Call for help early and often in a PPH. If medications fail, surgical options may be needed. If massive transfusion, will need intensivists and blood bank help.

Other options: uterine packing (plain gauze or gauze soaked in vasopressin or Hemabate), balloon tamponade (Foleys, Bakri, others) - use next if medications fail.

Surgical options: curettage, uterine compression sutures (B-Lynch), artery ligation, uterine artery embolization, hysterectomy.
KEY POINTS ABOUT POSTPARTUM HEMORRHAGE

1. Prepare for PPH at every delivery.
2. Think “Four Ts” to remember the causes: Tone, Trauma, Tissue and Thrombin. Tone is the majority cause, followed by trauma.
3. Initial steps: ABCs, IV, O2, monitor, help, type and cross for blood products, aggressive bimanual massage.
5. If medications fail, try packing with balloon tamponade or gauze.
Due to your astute clinical management, your 22-year-old now G1P1 does well and is transferred to the postpartum floor. On rounds the next morning, which of the following topics would you wish to cover with her?

1. Amount and character of her vaginal bleeding (lochia).
2. Any difficulties with feeding the baby.
3. How she and her partner are coping with events surrounding the delivery.
4. Plans for birth control, if any.
5. Pain control.
6. Any lightheadedness or difficulty with walking.
7. All of the above are proper postpartum topics.
8. None of the above - these topics are the nurse’s job.
Postpartum Care

We make every effort to allow uninterrupted mother-baby bonding for the first hour.

ROUTINE POSTPARTUM ROUNDS:

- Vaginal bleeding (lochia)
- Pain control
- Breastfeeding (or bottlefeeding)
- Walking
- Mood, emotional state, coping
- Eating, drinking
- Home support and plans
- Birth control plans
Complications in the Postpartum Period

Breast problems:
- Feeding pain or engorgement
- Mastitis

Bleeding complications:
- Abnormally heavy bleeding
- Postpartum anemia

Infections:
- Chorioamnionitis, UTIs, surgical infections

Clots:
- DVT, PE

Anything that can happen to a general medical patient in the hospital can happen to a postpartum patient.
KEY POINTS ABOUT POSTPARTUM CARE

Routine topics:

- Feeding - herself and baby
- Walking
- Pain
- Bleeding
- Home support
- Mood
- Birth control

Complications to watch for:

- Uncontrolled pain
- DVT/PE
- Infection: chorio, UTI or surgical
- Breast complications
- Excessive bleeding and anemia
- Postpartum depression
Welcome, and thanks for listening!