Medical Complications of Pregnancy

EMC 420: Maternal & Child Emergency Care

D. Trigg, MD

Objectives

This lecture will enable you to discuss:

- OB medical emergencies
- Their typical clinical presentations
- The timing of these presenting signs and symptoms
- Use of the timing of these complications to help establish the diagnosis
- Use of the timing of these to establish the urgency and need for ALS for these pregnancy complications

Objectives , cont.

The second part of this lecture will enable you to discuss several medical conditions exclusive to pregnancy:

- Pregnancy-induced hypertension
- Severe pre-eclamsia
- Eclampsia
- HELLP syndrome
- Acute fatty liver of pregnancy

Term Pregnancy- Related Deaths

- ***Hypertension*** 25 %
- Hemorrhage 24 %
- Embolism 17 %
- Infection 16 %
- Cardiomyopathy 5 %

Presentations of OB Medical Emergencies

- Assessment of most common pregnancy complications
- Approach to potentially life-threatening OB presentations
- Correlation of the timing of presentations to the most likely causes of pregnancy complication

Approach

- Correlation of timing and. most likely cause of complication:
  - in clinical presentations, the *timing* of the presenting signs and symptoms often relate to the clinical significance.
- What follows is a correlation of non-traumatic, potentially life threatening signs and symptoms, and their etiologies, and the *timing* when these are most likely to occur during pregnancy.

Timing of and Likely Causes

- Timing of presentations and initial assessment of likely causes of complications
  - Before the diagnostic considerations, *first STABILIZE*
    - Initially, not concerned with the timing of the presenting symptoms, signs, and settings,
    - but rather the need to immediately initiate ALS
  - Timing helps with the diagnosis

EMC 420

Timing of Bleeding

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

1. Ectopic ("tubal") pregnancy - in <u>any</u> childbearing age female
2. Abortion - spontaneous, or otherwise
3. Placenta previa
4. Abruptio placentae
5. Hemorrhage (postpartum)

EMC 420

Abdominal Pain

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

1. Ectopic
2. Abortion
3. Abruptio placentae
4. Cholelithiasis-Cholecystis
5. Preeclampsia-Eclampsia
6. Appendicitis
7. Pyelonephritis
8. Other (ovarian torsion)

EMC 420

Headache in Pregnancy

1st	2nd	3rd	Intrapartum	Postpartum
	x	x	x	x

- Preeclampsia-eclampsia
- Other
  - Aneurysm
  - Hypoglycemia
  - Migraine

EMC 420

Timing of Delirium

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

- Eclampsia
- Sepsis
- Hypoglycemia
  - Idiopathic
  - Insulin OD

EMC 420

Seizures in Pregnancy

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

1. Epilepsy
2. Eclampsia

EMC 420

Chest Pain in Pregnancy

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

1. Pulmonary Embolism
2. Other (pneumonia)

EMC 420

Fever in Pregnancy

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

Sepsis

a. Abortion (incomplete or septic)
b. Pyelonephritis
c. Chorioamnionitis (prolonged ROM)
d. Puerperal fever

EMC 420

Nausea, Vomiting in Pregnancy

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

- Hyperemesis gravidarum
- Appendicitis
- Pyelonephritis
- Other
  - Viral
  - Hypoglycemia

EMC 420

Hypoglycemia in Pregnancy

1st	2nd	3rd	Intrapartum	Postpartum
x	x	x	x	x

Hypoglycemic symptoms

1. Diabetes - insulin OD
2. Reactive hypoglycemia

EMC 420

Hypertensive Disorders of Pregnancy

- 7 % of all pregnancies
- Aggravation of chronic hypertension, or
- Pregnancy-induced hypertension
  - Uncomplicated
  - Mild Pre-eclampsia
  - Severe pre- Pre-eclampsia
  - Eclampsia
  - HELLP syndrome

EMC 420

Epidemiology of Preeclampsia

- 25% of all pregnant nulliparous women develop hypertension
- 5-10% will meet diagnostic criteria for preeclampsia
- Evidence that onset : shifting to postpartum period
- Eclampsia appears to be decreasing in frequency
  - 1/700 deliveries in the 1970s
  - 1/2300 deliveries in the 1990s
- Improvement thought to be due to:
  - Improving prenatal care
  - Early detection and delivery of preeclamptic mothers
  - Use of magnesium sulfate

EMC 420

Risks Factors

- Nulliparity
- Age: more common < age 20, or > age 35
- Twins
- + FH
- Pre-existing hypertension
- Pre-existing renal disease
- Diabetes Mellitus
- Excessive weight gain
- Angiotensin gene T 235

EMC 420

Early Intervention / Prevention

No evidence-based recommendations

- Nutritional Deficiencies
  - Magnesium
  - Zinc
  - Omega 3 fatty acids

EMC 420

Etiology

- Phases to the syndrome:
  - Placental phase
  - Followed by systemic multiple organ phase
- Immunologic and hormonal factors:
  - Desensitization and prevention in subsequent pregnancies
  - Trophoblastic disease
- Arterioles:
  - Faulty uterine arteriole - placental endovascular connection
  - Thick and muscular arterioles

EMC 420

Pathophysiology

Muscular arterioles lead to:

- Increased vascular resistance
- Decreased blood flow placental ischemia
- Release of certain vasoactive molecules
  - Which act on the maternal vascular endothelium
- Increased vasospasm
  - Results in hypertension, and
  - Coagulation abnormalities seen in preeclampsia

EMC 420

Clinical Definition

- Classic pre-eclampsia triad:
  - Hypertension (greater than 140 / 90)
  - Proteinuria (greater than 1+) [300 mg/24hr]
  - Edema, generalized (less reliable)
- On 2 separate occasions (more than 6 hr apart):
  - Hypertension *AND* proteinuria
- Associated finding supportive of Dx:
  - Rapid weight gain

EMC 420

Severe Pre-eclampsia Dx

- Hx
  - Headaches
  - Visual Disturbances
  - +/- CHF Sx
  - RUQ or epigastric pain
  - Decreased urine output
- PE
  - SBP > 160-180 ; DBP > 110
  - CHF signs
- Lab
  - Increased proteinuria
  - Abn liver, kidney, and clotting tests

EMC 420

Clinical Course for Severe Pre-eclampsia

- Eyes
  - Papilledema (loss of disc margins)
  - Arteriolar spasm
  - Retinal hemorrhage
- Cardiopulmonary
  - Pulmonary edema
  - ARDS
- Liver
  - Hemorrhage
  - Rupture

EMC 420

End-Organ Damage of Severe Pre-eclampsia

- CNS
  - Seizures
  - CVA
  - Encehalopathy
- Pancreatitis
- Renal failure
- Blood / hematopoetic system
  - DIC
  - HELLP Syndrome

EMC 420

Complications

- Damage to the uteroplacental circulation
  - IUGR (intrauterine growth retardation)
  - Abruptio
  - Fetal distress / demise

EMC 420

Prehospital Care

- Left lateral decubitus position
- Seizures
  - Magnesium: ***4 gm IV*** or ***10 gm IM***
  - Benzodiazepines
- Prehospital notification
  - ED physician
    - alert appropriate specialists
    - notify OR ; T + C blood
- Transfer: consider in "all" preterm preeclampsia
  - To facility with preterm infant / NICU
  - To facilities with in-house -obstetric specialists
  - Consider dexamethasone 10mg IV

EMC 420

Inpatient Assessment

- Monitor
  - VS , Neuro checks , DTRs Q 15-30 min
- Lower BP (prevent CVA)
- Delivery as soon as fetal maturity is close
  - [balancing maternal condition vs fetal immaturity]

EMC 420

Eclampsia

- Onset of active seizures in a pre-eclamptic patient
- Treatment goals
  - Seizure management
  - Lower BP
  - Delivery
    - As soon as fetal maturity is close
    - Vaginal delivery preferred

EMC 420

Seizure Management

- Avoid polypharmacy [avoid mega-benzos]
- MgSO4
  - Preferred anticonvulsant for eclampsia
- MgSO4
  - Also for used for severe pre-eclampsia
    - Prevent seizures
    - Lower BP
      - Prevent CVA

EMC 420

Management of Preeclamptic Hypertension

Goal
- Do NOT to try to normalize the BP
  - no studies showing benefits of DBP <100
- DBP: 90 - 110 mmHg (stabilize BP at about 160/100)
- Prevent CVA

Treatment [***rapid*** reduction : controversial]
- ***Labetalol*** 20 -80 mg IV bolus Q 10 min
  - Also effective in controlling preeclampsia hypertensive crises ventricular arrhythmias
- Mg 4-6 grams IV loading dose
- Hydrlazine 10 mg IV (no evidence: superiority to Labetalol)

EMC 420

Other Therapies

- Intravenous Fluids
  - Prone to fluid overload
  - But treat hypovolemia
  - Urine output: monitored carefully - Foley catheter
- Intubation
  - Indications same as for the nonpregnant patient
  - However: BP may be significantly worsened
    - pretreatment with labetalol may block this
  - Airway edema may be present
    - should be considered a ***difficult airway***, with appropriate precautions

EMC 420

Postpartum

Severe Pre-eclampsia
- Tx : same as Pre-delivery Pre-eclampsia
- Preeclampsia and eclampsia can occur
  - Up to 2 weeks postpartum

EMC 420

HELLP Syndrome

- Atypical severe pre-eclampsia presentation
- H emolysis
  - (abnormal peripheral smear, or bilirubin ≥1.2 mg/dL, or LDH ≥600)
- E levated
- L iver enzymes (≥2X normal)
- L ow
- P latlets (low platelets - count <100,000μL)
  - D-dimer test : early identification of patients with preeclampsia who may develop severe HELLP syndrome

EMC 420

Rare, Life-threatening Condition

- Occurs : 1/200 pregnancies
  - Antepartum: 69 % ; postpartum 31 %
- Complications
  - P. Edema / ARDS
  - Liver and kidney failure
  - Internal bleeding (DIC)
  - CVA
  - Placental abruptio
- Maternal mortality : 2%
- Fetal/newborn : 8 – 60 %

EMC 420

Management of HELLP

- Similar to pre-eclampsia
  - High blood pressure
  - Seizure
- Anemia or bleeding
  - Blood transfusion
- Steroids
  - Dexamethasone (Decadron)
    - High dose: 10 mg IV Q 12 hours
    - Help fetal lung maturation
  - Reverses maternal HELLP abnormalities

EMC 420

Summary

In clinical OB presentations, the timing of the presenting signs and symptoms often:

- Directs us to the diagnosis of the pregnancy complication
- More importantly, directs us to the clinical significance these pregnancy complications
  - Need for ALS correlates with of the timing of these OB presentations
  - Drugs: Mg; Labetolol; Dexamethasone

EMC 420