UNIT 2: OBSTETRICS
SECTION B: ABNORMAL OBSTETRICS

Educational Topic 18: Preeclampsia-Eclampsia

Rationale: Preeclampsia-eclampsia accounts for significant morbidity and mortality in both the mother and newborn.

Intended Learning Outcomes:

A student should be able to:

- Define the types of hypertension in pregnancy
- Describe the pathophysiology of preeclampsia-eclampsia
- List risk factors for preeclampsia
- Recognize the signs and symptoms to diagnose preeclampsia-eclampsia
- Explain the management of a patient with preeclampsia-eclampsia
- List the maternal and fetal complications associated with preeclampsia-eclampsia

TEACHING CASE

CASE: An 18 year old G1P0 currently at 38 0/7 weeks presents for her routine prenatal visit. She has had an uncomplicated pregnancy up to this point, with the exception of a late onset of prenatal care and obesity (BMI of 35 kg/m^2). She reports that during the past week, she has noted some swelling of her hands and feet. She also has been feeling a bit more fatigued and has had a headache on and off. She reports good fetal movement. She has had some contractions on and off, but nothing persistent. Her blood pressure is 147/92 and her urine dip has 1+ protein/no ketones/no glucose. The fundal height measures 36 cm, the fetus is cephalic with a heart rate of 144 bpm. On physical exam you note that the patient has 3+ pre-tibial edema, and trace edema of her hands and face. She has 2+ deep tendon reflexes and 2 beats of clonus. You review her blood pressures up to this point and note that at the time of her first prenatal visit at 18 weeks, her blood pressure was 130/76 and she had no protein in her urine. However, since that visit, her blood pressures seem to have been climbing higher with each visit. Her last visit was one week ago, and she had a blood pressure of 138/88 with trace protein in the urine and she has gained 5 pounds.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:

Competencies addressed:

- Patient care
- Medical Knowledge
- System-Based Practice

1. What is considered a hypertensive blood pressure during pregnancy?

    - In pregnancy, hypertension is defined as either a systolic blood pressure ≥ 140 or diastolic blood pressure ≥ 90 or both.

2. What types of hypertensive syndromes can occur during pregnancy?

    - *Chronic hypertension:* Requires that the patient have documented hypertension preceding 20 weeks gestation, or where hypertension is first noted during pregnancy and persists for longer than 12 weeks postpartum
    - *Preeclampsia-eclampsia:* Development of new onset hypertension and proteinuria after 20 weeks of pregnancy. Is stratified into mild and severe forms. There are atypical forms of preeclampsia as well.
    - *Preeclampsia superimposed on chronic hypertension:* Superimposed preeclampsia should be reserved for those women with chronic hypertension who develop new-onset proteinuria (≥ 300 mg in a 24-hour collection) after the 20th week of pregnancy. In pregnant women with preexisting hypertension and proteinuria, the diagnosis of superimposed preeclampsia should be considered if the patient experiences sudden significant increases in blood pressure or proteinuria or any of the other signs and symptoms consistent with severe preeclampsia.
    - *Gestational Hypertension:* Hypertension without proteinuria which first appears after 20 weeks gestation or within 48 to 72 hours after delivery and resolves by 12 weeks postpartum.

3. How does the physiology of preeclampsia lead to the clinical symptoms and findings?

    - Hypoxia, hypoperfusion and ischemia lead to the clinical placental pathophysiology (with fetal compromise: IUGR, oligohydramios, placental abruption)
    - Systemic endothelial dysfunction leads to central & peripheral edema, proteinuria, and hypertension (from disruption of vascular regulation). Endothelial dysfunction in target organs leads to headache, epigastric pain, and renal dysfunction. Microvascular endothelial destruction leads to release of procoagulants and DIC.

4. What are the laboratory findings that support a diagnosis of preeclampsia-eclampsia syndrome?

    - Proteinuria (> 300 mg on a 24 hour urine collection)
    - Elevated hematocrit
    - Hemolysis
    - Thrombocytopenia (< 100,000 cells/mm^3)
    - Elevated liver enzymes (ALT/AST twice normal)
    - Elevated serum uric acid concentration

5. What types of maternal and fetal complications are associated with preclampsia-eclampsia syndrome?

- Maternal:
  - CNS: eclamptic seizure, stroke
  - Cardiopulmonary: pulmonary edema
  - Hepatic: Subcapsular hematoma or hepatic rupture
  - Renal: renal failure or acute tubular necrosis
  - Hematologic: hemorrhage, DIC
- Fetal:
  - Preterm delivery
  - Abruptio Placenta
  - Fetal growth restriction
  - Hypoxic ischemic encephalopathy
  - Fetal death

REFERENCES

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