Hypertensive Disease of Pregnancy: Review Questions

Ursula C. Brewster, MD

QUESTIONS

Choose the single best answer for each question.

Questions 1 and 2 refer to the following case.

A 27-year-old woman who is 30 weeks pregnant presents to her obstetrician/gynecologist for routine follow-up and has a blood pressure of 150/105 mm Hg. She was previously normotensive. Urinalysis reveals a specific gravity of 1.020 with 1+ proteinuria and no cells. Serum uric acid level is 5.0 mg/dL. Platelet count and liver function tests are normal. Analysis of a 24-hour urine collection shows 1.1 g of protein.

1. **Which of the following does this patient most likely have?**
   (A) Chronic hypertension
   (B) Gestational hypertension
   (C) Normal blood pressure for pregnancy
   (D) Preeclampsia

2. **The patient is placed on bed rest, and antihypertensive medications are started. Which of the following medications would be used as a first-line agent?**
   (A) Captopril
   (B) High-dose lasix
   (C) Intravenous (IV) magnesium sulfate
   (D) Methyldopa
   (E) No medications are safe in pregnancy

3. **A woman who is 36 weeks pregnant presents complaining of mid-epigastric tenderness, nausea, and vomiting. She looks unwell. Her blood pressure is 146/100 mm Hg. Results of laboratory testing reveal normal renal function, a platelet count of 98 × 10^3/μL, and schistocytes visible on a blood smear. The serum aspartate aminotransferase (AST) level is 80 IU/L. The patient is diagnosed with HELLP (hemolysis with a microangiopathic blood smear, elevated liver enzymes, and a low platelet count) syndrome. Which of the following is the most important initial therapeutic intervention for this patient?**
   (A) Bedrest until fetal age reaches 40 weeks
   (B) Immediate delivery
   (C) Platelet infusion to prevent bleeding
   (D) Right upper quadrant ultrasound

4. **A 38-year-old woman who is 36 weeks pregnant presents for routine follow-up. She has had hypertension since age 34 years, which requires antihypertensive therapy. Prior to her pregnancy, the patient's blood pressures averaged 130/70 mm Hg on amlodipine. During her first trimester, her blood pressure averaged 120/60 mm Hg but has risen in recent weeks to 150/95 mm Hg on the same therapy. The patient's only complaint is of worsening lower extremity edema. A 24-hour urine collection reveals 1500 mg of protein. Serum laboratory values, including electrolytes, liver function tests, and platelet count, are normal. What is this patient's diagnosis?**
   (A) Chronic essential hypertension
   (B) Eclampsia
   (C) HELLP syndrome
   (D) Preeclampsia

(turn page for answers)

Dr. Brewster is an assistant professor of medicine, Section of Nephrology, Yale University School of Medicine, New Haven, CT.

ANSWERS AND EXPLANATIONS

1. **(D) Preeclampsia.** This patient's blood pressure is abnormally high for a pregnant woman, and she has preeclampsia. Preeclampsia occurs after 20 weeks of gestation. Although definitions of preeclampsia vary, current guidelines propose that a blood pressure greater than 140/90 mm Hg in the setting of more than 300 mg of protein in a 24-hour collection is suggestive of preeclampsia.[1] Preeclampsia must be differentiated from chronic hypertension by the absence of hypertension and proteinuria prior to pregnancy. Gestational hypertension describes hypertension in pregnancy that is not associated with proteinuria and that resolves within 12 weeks postpartum. Preeclampsia most often occurs in nulliparous women, and risk factors include preexisting renal disease, multiple pregnancies, diabetes, and extremes of reproductive age. Although the etiology of preeclampsia has yet to be completely determined, it appears that impaired trophoblastic invasion, endothelial cell dysfunction, and antiangiogenic factors play a role. Treatment of preeclampsia includes hospitalization to monitor the mother and fetus, blood pressure control, and IV magnesium to prevent convulsions; early delivery is often required.
2. **(D) Methyldopa.** Antihypertensive therapy is essential to the treatment of preeclampsia. Methyldopa is the most commonly used antihypertensive agent in this setting, and randomized trials have demonstrated its long-term safety in children whose mothers were treated with this agent during pregnancy. Angiotensin-converting enzyme inhibitors are contraindicated in pregnancy and have been associated with oligohydramnios, neonatal renal failure, and death. IV magnesium sulfate is an accepted treatment for the prevention of eclamptic convulsions, and although it may slightly lower systemic blood pressure, it is not an effective antihypertensive agent. The use of diuretics to treat hypertension remains controversial. There are times when use of diuretics is essential, but they should not be used as first-line treatment of hypertension.
3. **(B) Immediate delivery.** HELLP syndrome is a serious disorder that is life-threatening to the mother and fetus. It usually occurs between 28 and 36 weeks gestation but may occur postpartum in up to 30% of cases. Some believe HELLP syndrome is a severe form of preeclampsia. Prompt delivery is critical to the management of this syndrome. Platelet infusion should only be given in patients with severely low platelet counts ($< 20 \times 10^3/\mu L$), those with significant bleeding, or in patients with a platelet count less than $40 \times 10^3/\mu L$ but who may require cesarean delivery. Right upper quadrant ultrasound may show hepatic infarction or subcapsular hematoma but has no role in acute management of this patient. Bedrest alone would risk the life of the mother and fetus. When HELLP syndrome presents earlier in gestation, corticosteroids are given to improve lung maturity of the fetus before immediate delivery.
4. **(D) Preeclampsia.** This patient has had underlying chronic essential hypertension throughout most of her pregnancy but has now developed preeclampsia. Patients with hypertension often have decreased blood pressures during the first trimester, but by the third trimester, blood pressures increase to values seen prior to pregnancy. However, patients with chronic hypertension have a fivefold higher risk of preeclampsia. The rise in blood pressure to above baseline values, coinciding with the development of proteinuria and edema, is diagnostic of preeclampsia. Preexisting hypertension also increases the risk of intrauterine growth restriction, placental abruption, and mid-trimester fetal death.

REFERENCE

1. Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. Am J Obstet Gynecol 2000;183:S1–S22.

SELF-ASSESSMENT QUESTIONS ON THE WEB

Now you can access the entire self-assessment series on the Web. Go to www.turner-white.com, click on the "Hospital Physician" link, and then click on the "Board-Type Questions" option.

NEPHROLOGY

A current list of certification and recertification exam dates and registration information is maintained on the American Board of Internal Medicine Web site, at www.abim.org.

Copyright 2006 by Turner White Communications Inc., Wayne, PA. All rights reserved.