ACOG Practice Bulletin on Diagnosing and Managing Preeclampsia and Eclampsia

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The Committee on Practice Bulletins—Obstetrics of the American College of Obstetricians and Gynecologists (ACOG) has developed a practice bulletin on the diagnosis and management of preeclampsia and eclampsia. ACOG Practice Bulletin No. 33 appears in the January 2002 issue of Obstetrics and Gynecology.

Diagnosis

Although they have not been substantiated by research, the diagnostic criteria for preeclampsia developed by the National Blood Pressure Education Program Working Group are traditionally used in clinical practice and frequently employed in research protocols. They are as follows:

- A systolic blood pressure of 140 mm Hg or higher or a diastolic blood pressure of 90 mm Hg or higher occurring after 20 weeks of gestation in a woman whose blood pressure has previously been normal;
- Proteinuria, with excretion of 0.3 g or more of protein in a 24-hour urine specimen.

Although the exact incidence of preeclampsia remains unknown, this pregnancy-specific syndrome has been reported to affect 5 to 8 percent of pregnancies. Primarily a disorder of first pregnancies, it also occurs in many other settings, including multifetal gestations, chronic hypertension, and gestational diabetes.

Severe preeclampsia is diagnosed by the presence of one or more of the following:

- A systolic blood pressure of 160 mm Hg or higher or a diastolic blood pressure of 110 mm Hg or higher on two occasions six or more hours apart in a pregnant woman who is on bed rest;
- Proteinuria, with excretion of 5 g or more of protein in a 24-hour urine specimen or 3+ or greater on two random samples collected four or more hours apart;
- Oliguria, with excretion of less than 500 mL of urine in 24 hours;
- Pulmonary edema or cyanosis;
- Impairment of liver function;
- Visual or cerebral disturbances;
- Pain in the epigastric area or right upper quadrant;
- Decreased platelet count;
- Intrauterine growth restriction.

A woman with preeclampsia who has new-onset grand mal seizures is considered to have eclampsia.

Pathophysiologic Changes

Vascular changes in preeclampsia and eclampsia include hemoconcentration and intense vasospasm. Women with severe preeclampsia and liver involvement may develop HELLP syndrome (hemolysis, elevated liver enzymes, and low platelet counts), which increases the risk of adverse maternal and fetal outcomes. Persistent oliguria from acute tubular necrosis can result in acute renal failure. Maternal mortality is usually associated with intracranial hemorrhage.

In addition to fetal growth restriction, manifestations of eclampsia in the fetal-placental unit include placental abruption, oligohydramnios, and nonreassuring fetal status.

Clinical Considerations and Recommendations

Is there an effective test for identifying women at risk for preeclampsia? To date, no test has been shown to be reliable and cost-effective. The positive predictive value of uric acid levels is only 33 percent. Usefulness has not been demonstrated for Doppler velocimetry of the uterine arteries in low-risk pregnant women.

How should blood pressure be measured? For accuracy, use of a mercury sphygmomanometer is preferred, and cuff size should be appropriate. Blood pressure is measured after a rest period of 10 minutes or more, with the pregnant woman in an upright position. In the hospital setting, blood pressure can be measured with the woman sitting up or lying on her left side with her arm at the level of her heart. The woman should not use tobacco or caffeine within 30 minutes of the measurement.

What is the best treatment for preeclampsia? If the fetus is preterm and preeclampsia is mild, continued fetal and maternal evaluation is appropriate. The best tests for fetal evaluation have not been determined. The Working Group recommends weekly nonstress tests and/or bio-
physical profiles (repeated as indicated based on the woman's condition), twice-weekly testing if oligohydramnios or fetal growth restriction is suspected, and ultrasound examinations every three weeks. Daily assessment of fetal movement may be useful.

Laboratory tests for patients with mild preeclampsia and no progression include weekly platelet counts, liver enzyme levels, renal function evaluations, and protein levels (12- to 24-hour urine collection). If disease progression is in question, testing should be more frequent.

Pregnant women who are remote from term and have severe preeclampsia are best managed in a tertiary care center or in consultation with an obstetrician-gynecologist who has expertise in managing high-risk pregnancies. Daily laboratory tests and fetal surveillance may be needed.

Delivery in women with HELLP syndrome, regardless of gestational age, appears reasonable because of the seriousness of the syndrome. Before 32 weeks of gestation, women with HELLP syndrome should receive expectant management only in a tertiary care center or, with appropriate safeguards and informed consent, as part of a randomized clinical trial.

Is outpatient management appropriate? The Working Group reports that hospitalization is frequently recommended for women with new-onset preeclampsia. After serial assessment, the setting for continued management can be determined. Hospitalization until delivery allows rapid intervention for complications.

Ambulatory management may be an option in women with mild gestational hypertension or preeclampsia who are remote from term. In these situations, frequent monitoring is required, and hospitalization is indicated if preeclampsia worsens. If compliance is a problem, women with disease progression or severe preeclampsia should be hospitalized.

Is medical management beneficial during labor and delivery? Significant evidence supports the use of magnesium sulfate to prevent seizures in women with severe preeclampsia and eclampsia. Antihypertensive drug therapy, most commonly with hydralazine or labetalol, is generally recommended for women with a diastolic pressure of 105 to 110 mm Hg (or higher). Hydralazine is given intravenously in 5-mg to 10-mg doses until the desired response is achieved. Labetalol is given as a 20-mg intravenous bolus, followed by 40 mg after 10 minutes if the first dose is not effective; then 80 mg is administered every 10 minutes (maximum total dose: 220 mg).

What is the best delivery method in women with preeclampsia? Vaginal delivery at term is preferred in women with mild preeclampsia. The optimal delivery method in women with severe preeclampsia or eclampsia has not been evaluated. Use of cesarean delivery should be individualized.

Can anesthesia be used during labor and delivery? If required and in the absence of coagulopathy, regional or neuraxial analgesia/anesthesia is preferred.

How should eclampsia be managed? Magnesium sulfate should be given intravenously or intramuscularly to control convulsions and prevent recurrence. According to one protocol, a 4-g to 6-g loading dose diluted in 100 mL of fluid is given intravenously for 15 to 20 minutes; then a continuous intravenous infusion is administered at a rate of 2 g per hour.

Maternal treatment usually manages the fetal bradycardia that often occurs during eclampsia. Delivery should be timely, but cesarean section is not necessary. After the patient has been stabilized, the method of delivery depends on various factors, including dilation of the cervix, gestational age, and fetal presentation.

Does invasive hemodynamic monitoring have a role in management? Invasive hemodynamic monitoring (e.g., pulmonary artery catheter) may be useful in women with preeclampsia who have severe cardiac or renal disease, pulmonary edema, treatment-refractory hypertension, or unexplained oliguria.

Can preeclampsia and eclampsia be prevented? Antioxidant therapy (vitamin C, 1,000 mg per day; vitamin E, 400 mg per day) has shown promise, but large, randomized trials are needed. Although controversy exists, calcium supplementation has shown no benefit in large trials, and most evidence suggests little or no benefit for low-dose aspirin as prevention in women in the low-risk category.