Cardiovascular Catastrophes in the Obstetric Population

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KEYWORDS

• Pregnancy • Emergency • Cardiovascular • Eclampsia • Cardiomyopathy
• Dissection • Pulmonary embolism • Cardiac arrest

KEY POINTS

- The absence of proteinuria does not exclude the diagnosis of preeclampsia/eclampsia.
- Severely hypertensive pregnant patients might be paradoxically volume depleted; aggressive pressure control without volume resuscitation can lead to profound hypotension and shock.
- The incidence of pregnancy-related myocardial infarction is accelerating; physicians must be vigilant in screening pregnant patients for this condition.
- Left ventricular (LV) thrombus occurs in up to 30% of patients with peripartum cardiomyopathy (PPCM); it should be sought aggressively and treated if found because the effects of embolization are often devastating.
- In maternal cardiac arrest, the tenets of resuscitation remain the same as for the nonpregnant population, with a few modifications: uterine displacement for aortocaval decompression, compressions higher on the sternum, venous access above the diaphragm, and consideration of perimortem cesarean delivery.

INTRODUCTION

Pregnancy induces immense and profound changes in a woman's body, causing her to undergo many anatomic and physiologic changes in order to accommodate the physical and metabolic demands of carrying, delivering, and nurturing another (or more than one other) human being. These changes affect every system of the body, especially the cardiovascular system; they allow the body to balance the needs of both the fetus and the mother; however, these changes come with a price. These

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changes put both the mother and the fetus at risk for complications—some are less severe than others, some are life altering, and some are life threatening. This article discusses some infrequently seen, but life-threatening cardiovascular complications of the obstetric population that every emergency physician must know.

HYPERTENSIVE EMERGENCIES

Hypertension is one of the most common complications of pregnancy, affecting 10% of all pregnant women.[1] The number of pregnant patients with preexisting hypertension has been growing, and so has the number of pregnant patients (with or without preexisting hypertension) who experience hypertensive emergencies.[2] As a consequence, maternal morbidity and mortality rates related to hypertensive emergencies are also trending upward.[3]

The 4 major hypertensive categories related to pregnancy (**Table 1**), as defined by the American College of Obstetricians and Gynecologists (ACOG) Task Force on Hypertension in Pregnancy,[4] are listed below:

- Preeclampsia-eclampsia
- Chronic hypertension
- Chronic hypertension with superimposed preeclampsia
- Gestational hypertension

Table 1
Classification of hypertensive disorders of pregnancy

Category	Definition
Preeclampsia-eclampsia	• New-onset hypertension (SBP ≥140 mm Hg or DBP ≥90 mm Hg) accompanied by proteinuria, usually occurring after 20 wk of gestation *or* • New-onset hypertension without proteinuria, but associated with thrombocytopenia, impaired liver function, renal insufficiency, pulmonary edema, cerebral disturbances, or visual disturbances • Eclampsia is defined by the onset of tonic-clonic seizures
Chronic hypertension	• Hypertension (SBP ≥140 mm Hg or DBP ≥90 mm Hg) that is present and observable before pregnancy or that is diagnosed before the 20th week of gestation *or* • Hypertension that is diagnosed for the first time during pregnancy and does not resolve postpartum
Chronic hypertension with superimposed preeclampsia	Chronic hypertension *and* any of the following: • Sudden worsening of blood pressure elevation • New-onset proteinuria • Thrombocytopenia (platelet <100,000 cells/mm^3) • Increase in alanine aminotransferase or aspartate aminotransferase • Renal insufficiency • Pulmonary edema • Right upper quadrant pain, severe headaches
Gestational hypertension	• Hypertension detected for the first time after midpregnancy • No proteinuria or other clinical features of preeclampsia • If blood pressure normalizes by week 12 postpartum, a more specific diagnosis of transient hypertension of pregnancy is made

Abbreviations: DBP, diastolic blood pressure; SBP, systolic blood pressure.

Data from American College of Obstetrics and Gynecologists, Task Force on Hypertension in Pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. Obstet Gynecol 2013;122(5):1122–31.