Hypertensive Disorders of Pregnancy

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Hypertensive Disorders of Pregnancy

- **The four major hypertensive disorders that occur in pregnant women are:**

preeclampsia/eclampsia/HELLP SYNDROME

Gestational hypertension

Chronic hypertension

Preeclampsia superimposed on chronic hypertension

Definitions for the hypertensive disorders of pregnancy

Gestational hypertension	▪ New onset of systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg on at least 2 occasions 4 hours apart after 20 weeks of gestation in a previously normotensive individual **And:** ▪ No proteinuria ▪ No severe features of preeclampsia (thrombocytopenia, renal insufficiency, elevated liver transaminases, pulmonary edema, cerebral or visual symptoms)
Preeclampsia	▪ New onset of systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg on at least 2 occasions at least 4 hours apart after 20 weeks of gestation in a previously normotensive individual **or** systolic blood pressure ≥160 mmHg or diastolic blood pressure ≥110 mmHg confirmed within a short interval (minutes) to facilitate timely antihypertensive therapy **And:** ▪ Proteinuria (≥300 mg per 24-hour urine collection [or this amount extrapolated from a timed collection], or protein:creatinine ratio ≥0.3, or urine dipstick reading ≥2+ [if other quantitative methods are not available]) **Or, in the absence of proteinuria, new-onset hypertension with the new onset of any of the following:** ▪ Thrombocytopenia (platelet count <100,000/microL) ▪ Renal insufficiency (serum creatinine of >1.1 mg/dL [97 micromol/L] or a doubling of the serum creatinine concentration in the absence of other renal disease) ▪ Impaired liver function as indicated by liver transaminase levels at least twice the normal concentration ▪ Pulmonary edema ▪ Persistent cerebral or visual symptoms

Definitions for the hypertensive disorders of pregnancy

Preeclampsia with severe features	**Any of these findings in a patient with preeclampsia:** ▪ Systolic blood pressure ≥160 mmHg or diastolic blood pressure ≥110 mmHg on 2 occasions at least 4 hours apart (unless antihypertensive therapy is initiated before this time) ▪ Thrombocytopenia (platelet count <100,000/microL) ▪ Impaired liver function as indicated by liver transaminase levels at least twice the normal concentration or severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by alternative diagnoses, or both ▪ Progressive renal insufficiency (serum creatinine concentration >1.1 mg/dL [97 micromol/L] or a doubling of the serum creatinine concentration in the absence of other renal disease) ▪ Pulmonary edema ▪ Persistent cerebral or visual disturbances
Eclampsia	▪ In a patient with preeclampsia, generalized seizures that cannot be attributed to other causes
HELLP syndrome	▪ Presence of Hemolysis, Elevated Liver enzymes, and Low Platelet count; hypertension may be present (HELLP in such cases is often considered a variant of preeclampsia)

Definitions for the hypertensive disorders of pregnancy

Chronic (preexisting) hypertension	▪ Hypertension diagnosed or present before pregnancy or before 20 weeks of gestation. Hypertension that is first diagnosed during pregnancy and persists for at least 12 weeks post-delivery is also considered chronic hypertension. ▪ The blood pressure criteria are systolic blood pressure ≥140 mmHg, diastolic blood pressure ≥90 mmHg, or both. Ideally, this diagnosis is based on at least 2 elevated blood pressure measurements taken at least 4 hours apart. In the setting of severe hypertension, the diagnosis can be confirmed in a shorter interval to facilitate timely treatment.
Chronic hypertension with superimposed preeclampsia*	**Any of these findings in a patient with chronic hypertension:** ▪ A sudden increase in blood pressure that was previously well-controlled or an escalation of antihypertensive therapy to control blood pressure ▪ New onset of proteinuria or sudden increase in proteinuria in a patient with known proteinuria before or early in pregnancy
Chronic hypertension with superimposed preeclampsia with severe features	**Any of these findings in a patient with chronic hypertension and superimposed preeclampsia:** ▪ Systolic blood pressure ≥160 mmHg or diastolic blood pressure ≥110 mmHg despite escalation of antihypertensive therapy ▪ Thrombocytopenia (platelet count <100,000/microL) ▪ Impaired liver function as indicated by liver transaminase levels at least twice the normal concentration or severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by alternative diagnoses, or both ▪ New-onset or worsening renal insufficiency ▪ Pulmonary edema ▪ Persistent cerebral or visual disturbances

Comparison of the major hypertensive disorders that occur in pregnant women

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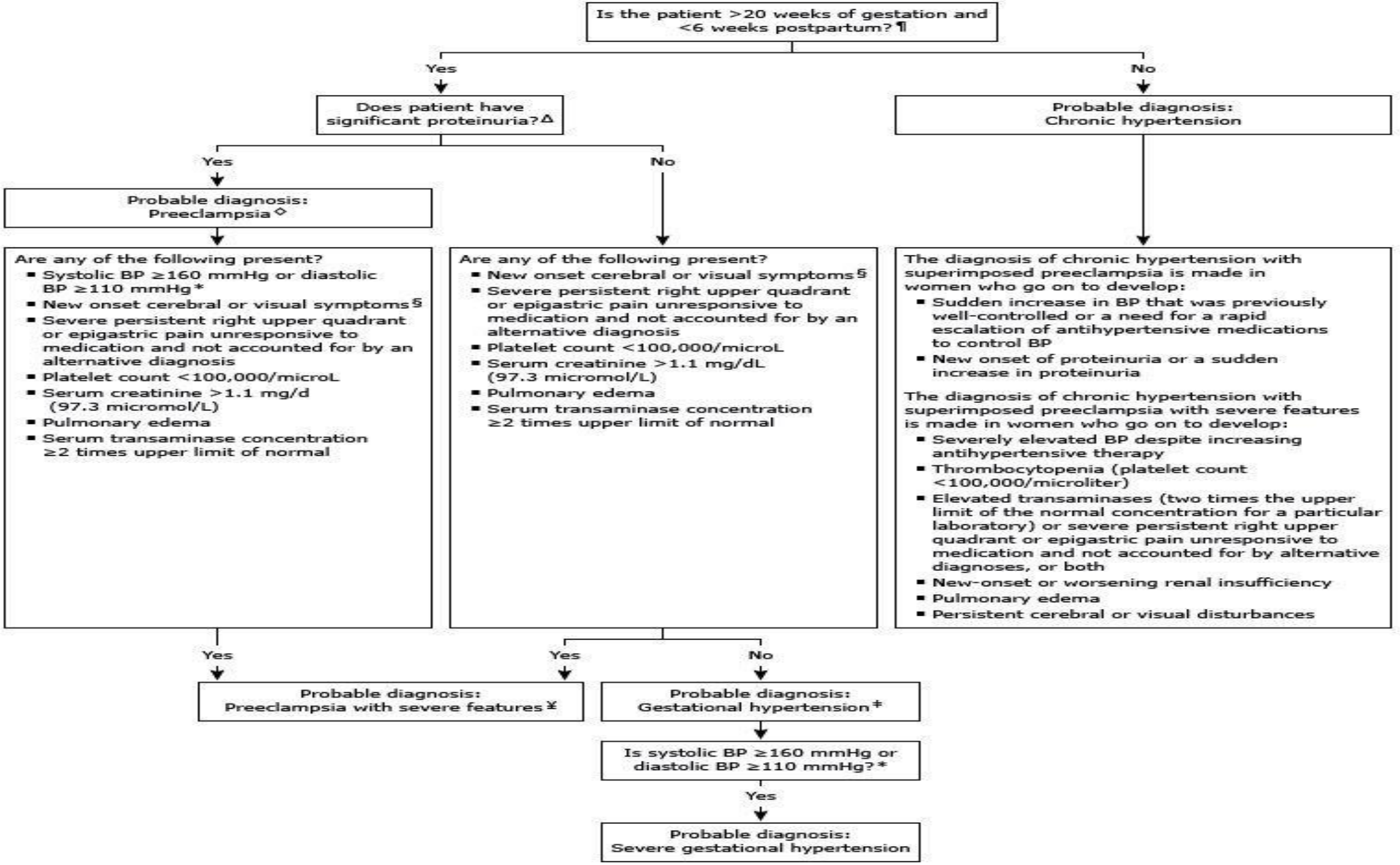
	Normotension before pregnancy	Hypertension during pregnancy (%)	Proteinuria	Thrombocytopenia and/or increased transaminases
Preeclampsia	Yes	100	Usually present	Variable, depending on whether preeclampsia is at the severe end of the disease spectrum
HELLP	Yes	82 to 88	Usually present	100%
Gestational hypertension	Yes	100	No	No
Chronic hypertension	No	100	Variable	No
Preeclampsia superimposed on chronic hypertension	No	100	Usually present	Variable, depending on whether preeclampsia is at the severe end of the disease spectrum


Is the patient >20 weeks of gestation and <6 weeks postpartum?¶
Yes
No
Does patient have significant proteinuria?Δ
Probable diagnosis: Chronic hypertension
Yes
No
Probable diagnosis: Preeclampsia◇
Are any of the following present?
Systolic BP ≥160 mmHg or diastolic BP ≥110 mmHg*
New onset cerebral or visual symptoms§
Severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by an alternative diagnosis
Platelet count <100,000/microL
Serum creatinine >1.1 mg/d (97.3 micromol/L)
Pulmonary edema
Serum transaminase concentration ≥2 times upper limit of normal
Are any of the following present?
New onset cerebral or visual symptoms§
Severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by an alternative diagnosis
Platelet count <100,000/microL
Serum creatinine >1.1 mg/dL (97.3 micromol/L)
Pulmonary edema
Serum transaminase concentration ≥2 times upper limit of normal
The diagnosis of chronic hypertension with superimposed preeclampsia is made in women who go on to develop:
Sudden increase in BP that was previously well-controlled or a need for a rapid escalation of antihypertensive medications to control BP
New onset of proteinuria or a sudden increase in proteinuria
The diagnosis of chronic hypertension with superimposed preeclampsia with severe features is made in women who go on to develop:
Severely elevated BP despite increasing antihypertensive therapy
Thrombocytopenia (platelet count <100,000/microliter)
Elevated transaminases (two times the upper limit of the normal concentration for a particular laboratory) or severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by alternative diagnoses, or both
New-onset or worsening renal insufficiency
Pulmonary edema
Persistent cerebral or visual disturbances
Yes
Yes
No
Probable diagnosis: Preeclampsia with severe features¥
Probable diagnosis: Gestational hypertension+
Is systolic BP ≥160 mmHg or diastolic BP ≥110 mmHg?*
Yes
Probable diagnosis: Severe gestational hypertension

Preeclampsia

Criteria for the diagnosis of preeclampsia

Systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg on at least 2 occasions at least 4 hours apart after 20 weeks of gestation in a previously normotensive patient AND the new onset of 1 or more of the following*:
▪ Proteinuria ≥0.3 g in a 24-hour urine specimen or protein/creatinine ratio ≥0.3 (mg/mg) (30 mg/mmol) in a random urine specimen or dipstick ≥2+ if a quantitative measurement is unavailable
▪ Platelet count <100,000/microL
▪ Serum creatinine >1.1 mg/dL (97.2 micromol/L) or doubling of the creatinine concentration in the absence of other renal disease
▪ Liver transaminases at least twice the upper limit of the normal concentrations for the local laboratory
▪ Pulmonary edema
▪ New-onset and persistent headache not accounted for by alternative diagnoses and not responding to usual doses of analgesics ¶
▪ Visual symptoms (eg, blurred vision, flashing lights or sparks, scotomata)

Preeclampsia is considered superimposed when it occurs in a woman with chronic hypertension. It is characterized by worsening or resistant hypertension (especially acutely), the new onset of proteinuria or a sudden increase in proteinuria, and/or significant new end-organ dysfunction after 20 weeks of gestation in a woman with chronic hypertension.

Preeclampsia

In a patient with preeclampsia, the presence of one or more of the following indicates a diagnosis of "preeclampsia with severe features"

In a patient with preeclampsia, the presence of one or more of the following indicates a diagnosis of "preeclampsia with severe features"

Severe blood pressure elevation:
Systolic blood pressure ≥160 mmHg or diastolic blood pressure ≥110 mmHg on 2 occasions at least 4 hours apart while the patient is on bedrest; however, antihypertensive therapy generally should be initiated upon confirmation of severe hypertension, in which case criteria for severe blood pressure elevation can be satisfied without waiting until 4 hours have elapsed.
Symptoms of central nervous system dysfunction:
New-onset cerebral or visual disturbance, such as: ▪ Photopsia, scotomata, cortical blindness, retinal vasospasm ▪ Severe headache (ie, incapacitating, "the worst headache I've ever had") or headache that persists and progresses despite analgesic therapy and not accounted for by alternative diagnoses
Hepatic abnormality:
Impaired liver function not accounted for by another diagnosis and characterized by serum transaminase concentration >2 times the upper limit of the normal range or severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by an alternative diagnosis
Thrombocytopenia:
<100,000 platelets/microL
Renal abnormality:
Renal insufficiency (serum creatinine >1.1 mg/dL [97.2 micromol/L] or a doubling of the serum creatinine concentration in the absence of other renal disease)
Pulmonary edema

5) randomly

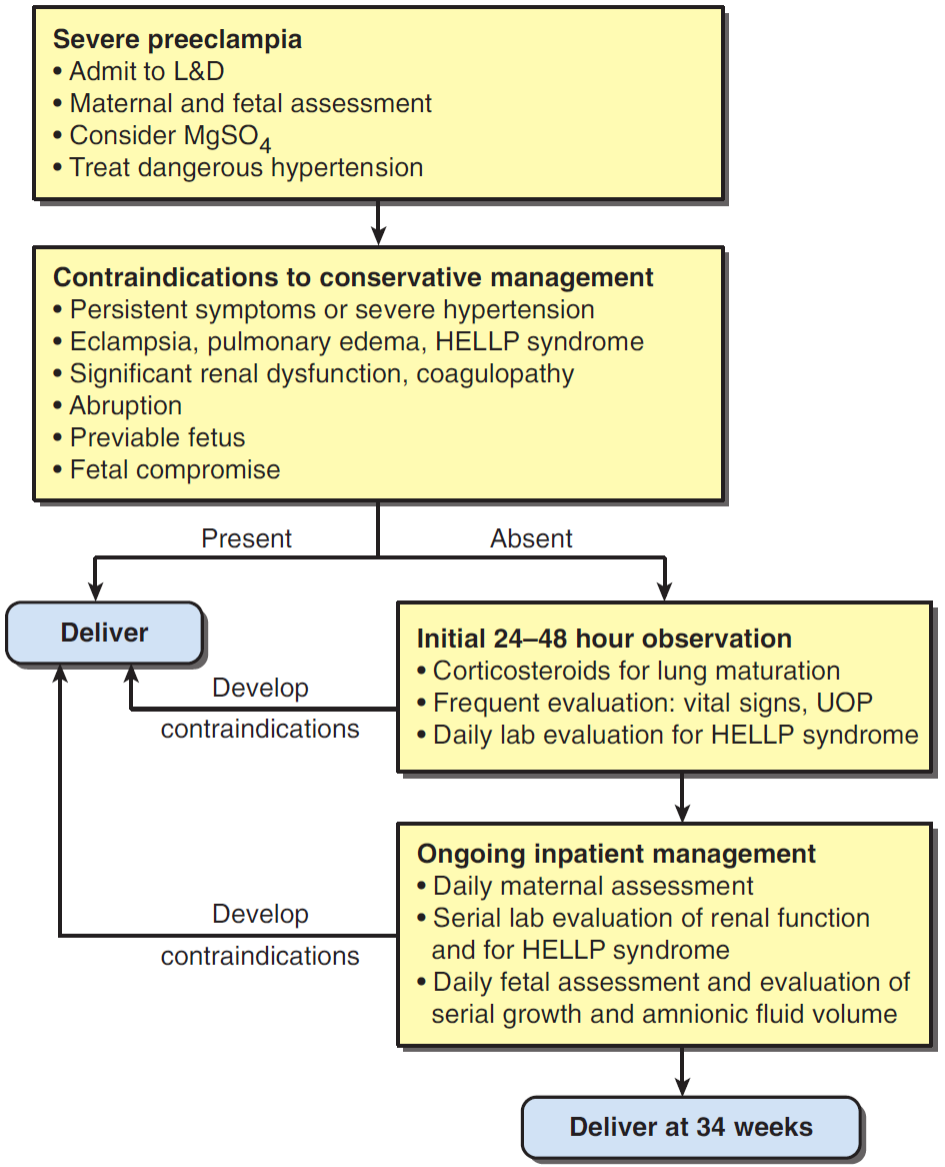


FIGURE 41-2 Clinical management algorithm for severe preeclampsia at <34 weeks. HELLP = hemolysis, elevated liver enzyme levels, low platelet count; L & D = labor and delivery; $MgSO_4$= magnesium sulfate; UOP = urine output.

TABLE 41-5. Indications for Delivery in Women <34 Weeks' Gestation Managed Expectantly

Prompt Delivery After Maternal Stabilization and After Single-dose Corticosteroid Therapy for Lung Maturation:[a]
Uncontrolled severe hypertension
Persistent headaches, refractory to treatment
Persistent epigastric pain
Eclampsia
HELLP syndrome
Pulmonary edema
Placental abruption
Disseminated intravascular coagulation
Stroke
Myocardial infarction
Nonreassuring fetal status
Fetal demise
Delay Delivery 48 hr If Possible to Allow Corticosteroid Therapy for Lung Maturation:
Preterm ruptured membranes or labor
Fetal-growth restriction
Oligohydramnios
Reversed end-diastolic Doppler flow in umbilical artery
Worsening renal dysfunction

[a]Inital dose only, do not delay delivery.
HELLP = hemolysis, elevated liver enzyme levels, low platelet count.
From American College of Obstetricians and Gynecologists, 2020b; Society for Maternal-Fetal Medicine, 2011.

THANKS FOR YOUR KIND ATENSION