

First Trimester Hemolysis, Elevated Liver Enzymes, Low Platelets Syndrome in a Surrogate Pregnancy

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Abstract

Background The occurrence of hemolysis, elevated liver enzymes, low platelets (HELLP) syndrome before 20 weeks of gestation is rare. HELLP is a possible but rare syndrome in gestational surrogate pregnancies for surrogates with risk factors for development of preeclampsia.

Case A 32-year-old patient with chronic hypertension and positive antinuclear antibody presented for prenatal care at 13 weeks and 1 day. She was a surrogate for the embryo of a 43-year-old couple. By 15 weeks she developed uncontrolled hypertension requiring hospitalization. She was expectantly managed until her condition deteriorated. At 16 weeks and 1 day she developed hemolysis, elevated liver enzymes, thrombocytopenia, and fetal demise.

Conclusions HELLP syndrome is rare and carries a significant morbidity and mortality for the mother and fetus. Clinicians should encourage the surrogate to share her medical history with the embryo donor for appropriate counseling on pregnancy risks.

Keywords

- ▶ HELLP syndrome
- ▶ previable
- ▶ preeclampsia
- ▶ gestational surrogate
- ▶ in vitro fertilization

Hypertensive disorders of pregnancy complicate up to 10% of pregnancies and are one of the leading causes of maternal and perinatal morbidity and mortality.¹ By definition, preeclampsia is the development of blood pressure elevation after 20 weeks of gestation. The occurrence of hemolysis, elevated liver enzymes, low platelets (HELLP) syndrome before 20 weeks of gestation is extremely rare but has been reported.^{2–6} Some studies suggest there is an increased risk for preeclampsia with in vitro fertilization.⁷ We present the first case of HELLP syndrome in a gestational surrogate at 16 weeks gestation.

Case

A 32-year-old African American G3P2002 presented for prenatal care at 13 weeks and 1 day gestation. She is a gestational surrogate for the embryo of a 43-year-old couple who is a work-colleague and friend. Her medical history is complicat-

ed by chronic hypertension controlled on methyl dopa, asthma, and the history of antinuclear antibody (ANA)-positive status. Her pregnancy history is complicated by two prior cesarean deliveries, and she is a gestational surrogate, with a history of an early demise of one twin embryo at 9 weeks gestation. She was initially started on vaginal and intramuscular progesterone during the early part of her pregnancy, and continued on a low-dose aspirin throughout her pregnancy. At her initial appointment her blood pressure (BP) was in the severe range at 168/97 mm Hg and her urine analysis showed no protein. Her BP medication was increased, a 24-hour urine total protein was ordered in addition to baseline laboratories. Her 24-hour urine protein was normal at 160 mg/24 h and her platelet count was noted to be 96,000/ μ L. At her follow-up visit, she again had severe range BP of 165/82 mm Hg and her urine protein dipstick was 4 + . She was sent to labor and delivery for evaluation. She was admitted for 4 days, her 24-hour urine protein worsened to 1.1 g and her

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platelets were stable at 85,000 to 109,000/ μ L. Rheumatology was consulted given her history of ANA speckled positive status (low titer of 1:40) and additional laboratories, including complement levels, anticardiolipin, β -2-glycoprotein, antihistone, anticitrulline, antidouble-stranded DNA, rheumatoid factor were drawn and were normal. Rheumatology had no further recommendations. She had an echocardiogram that was also normal. Her blood pressure normalized with additional medication. She remained asymptomatic and was discharged for expectant management at 15 weeks and 4 days. At 16 weeks and 1 day, she presented for follow-up to the clinic and fetal demise was noted on ultrasound. Her BP was noted to be in the severe range at 180/104 mm Hg. She was sent to labor and delivery for labor induction. At this time, her preeclampsia laboratories were grossly abnormal, consistent with HELLP syndrome with platelets of 60,000/ μ L, aspartate aminotransferase 147 IU/L, alanine aminotransferase 154 IU/L, uric acid 6.4 mg/dL, lactate dehydrogenase 493 IU/L. She was started on magnesium for seizure prophylaxis and received misoprostol for labor induction. She had a successful vaginal delivery and required curettage for retained placenta. She was kept on magnesium for an additional 24 hours after delivery and by her 2 week follow-up visit, all laboratory values had normalized and her blood pressure was well controlled with low-dose labetalol.

A full autopsy was performed. Pathology of the fetus A revealed small growth age at 50% of expected weight (51 g) but no anatomic or microscopic abnormality. Fetus B was consistent with early fetal demise and no abnormalities were noted. Placenta A had patchy villous edema, accelerated villous maturation, deciduitis, three-vessel cord, and small placenta. Placenta B had extensive necrosis and decidual vasculopathy.

Comments

This is a unique case of early-onset HELLP syndrome. Assisted reproduction has been shown to have an increased risk of preeclampsia in some studies^{7,8} but not others.⁹ Part of the risk may be inherent to maternal advanced age, medical comorbidities, and an increased risk of multiple gestation.¹⁰ While gestational surrogates have been used for embryo donors with a poor obstetric history⁸; our case is a unique case in which a patient at increased risk for preeclampsia based on a positive ANA and chronic hypertension was chosen as the gestational surrogate. The American Society of Reproductive Medicine has an ethical guideline entitled "Consideration of the gestational carrier: a committee opinion." Though it mentions that financial payments may create incentives that might encourage potential gestational carriers to lie about health conditions or family history, there is no recommendation for sharing of medical history with the donor family. The only two considerations for becoming a gestational carrier are that of being greater than 21-years-old and having at least one prior successful delivery.^{11,12}

The incidence of HELLP is 5 to 76 per 10,000 deliveries.¹³ In most cases diagnosed antenatally (65%) at a median

gestation of 36 weeks (range, 25–41 weeks).¹⁴ Risk factors are nulliparity, history of gestational hypertensive disorder in prior gestation, chronic hypertension in nulliparous women, autoimmune disease, renal disease, multiple pregnancies.¹⁴ The perinatal mortality rate is 15 per 1,000 total births.¹⁴ Maternal morbidity includes coagulopathy, transfusion, intensive care unit admission, eclampsia, pulmonary edema, sepsis, liver hematoma, hepatic encephalopathy, renal failure, subarachnoid hemorrhage, delivery by cesarean,¹⁴ and maternal mortality is 1%.¹⁵ Due to the high risks of HELLP syndrome, we recommend careful selection of low-risk gestational surrogates to optimize pregnancy outcomes.

Note

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