

Babesia microti Infection in Pregnancy Mimicking HELLP Syndrome

Tariro Mupombwa¹, Bethany M. Mulla^{1*}, James E. Kirby² and Barbara M. O'Brien¹

¹Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Boston MA, USA

²Department of Pathology, Beth Israel Deaconess Medical Center, Brookline Avenue, Boston MA, USA

*Corresponding author: Bethany M. Mulla, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center 330 Brookline Avenue, Boston, MA 02215, USA, Tel: 757-277-3360; Fax: 617-667-4867; E-mail: bmulla@bidmc.harvard.edu

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Abstract

Babesiosis during pregnancy is an uncommon cause of hemolysis during pregnancy and may have a similar presentation to hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome. We report a case of a 34-year-old healthy gravida 3 para 1-0-1-1 at 38 weeks of gestation who was transferred to our tertiary care center for induction of labor for suspected HELLP syndrome. Peripheral blood smear from the referring hospital showed intra-erythrocytic ring forms consistent with *Babesia microti* infection. She was treated with clindamycin and quinine and had a vaginal delivery of a healthy infant. This case demonstrates that although uncommon, babesiosis should be on the differential for imitators of HELLP syndrome to optimize treatment and outcomes.

Keywords: Pregnancy; *Babesia microti* infection; Babesiosis; HELLP syndrome; Medical complications of pregnancy; Parasitic infections in pregnancy

Introduction

Hemolysis, elevated liver enzymes, and low platelet count (HELLP) syndrome is associated with maternal and fetal complications. HELLP syndrome is diagnosed by laboratory abnormalities; approximately 85% of cases have hypertension and proteinuria [1]. Magnesium sulfate is recommended for seizure prophylaxis, and prompt delivery is recommended [2]. Imitators of HELLP syndrome such as acute fatty liver and thrombocytopenic thrombotic purpura have been described [3]. We report a case of *Babesia microti* infection in pregnancy presenting similarly to HELLP syndrome.

Case Report

A 34-year-old gravida 3 para 1-0-1-1 at 38 1/7 weeks of gestation was transferred from a community hospital to our tertiary care center for induction of labor for suspected HELLP syndrome. The patient reported a one-week history of malaise, diffuse joint pain, "painful skin" and headaches. She denied rash, abdominal pain, fevers, chills, right upper quadrant pain, visual changes, contractions, vaginal bleeding, loss of fluid, or decreased fetal movement. She had no recent outdoor activity or sick contacts. Her past obstetric history was notable for one prior spontaneous vaginal delivery at term complicated by intrauterine growth restriction. She had a history of genital herpes simplex virus and was on antiviral prophylaxis without current lesions or prodromal symptoms. She denied tobacco, alcohol or illicit drug use. She was taking a prenatal vitamin and valacyclovir, and had no drug allergies. She lived in Massachusetts with her husband, son and dog. She had travelled to Minnesota three weeks prior to presentation.

On physical exam, her vital signs were normal. Her sclerae were anicteric and there was no palpable lymphadenopathy or splenomegaly. She had mild diffuse petechiae on her shins bilaterally. Her pelvic exam revealed no visible HSV lesions. Her cervix was 2 cm

dilated and 80% effaced. Fetal monitoring was reactive and reassuring. She had contractions every five to seven minutes on tocometry. Her fetus was normally grown on ultrasound, with normal amniotic fluid.

Laboratory evaluation was notable for a white blood cell count of 3.2 K/ μ L with 4% bands, 4% atypical lymphocytes and 53% neutrophils; hematocrit of 32.4%, platelets of 40 K/ μ L, creatinine of 0.9 mg/dL, uric acid of 4.7 mg/dL, AST of 71 IU/L, ALT of 81 IU/L, protein/creatinine ratio of 0.3, fibrinogen of 717 mg/dL, haptoglobin less than 5 mg/dL and lactate dehydrogenase of 356 IU/L. She was continued on magnesium sulfate for seizure prophylaxis, which had been started at the referring hospital, and received two units of platelets with the plan to induce labor after the completion of her platelet transfusion.

During her platelet transfusion, the referring hospital contacted our tertiary center because their laboratory technician noted an abnormal peripheral blood smear (Figure 1), which showed very rare intra-erythrocytic ring forms with single chromatin dots in mature red blood cells. Parasitemia was <0.1%. One extracellular ring form was noted. Taken together, these findings were consistent with infection by the tick-borne protozoan parasite, *Babesia*.

At the recommendation of an infectious disease specialist, this patient was started on clindamycin 600 mg by mouth three times daily and quinine 650 mg by mouth three times daily prior to induction of labor. Rifampin 300 mg by mouth twice daily was started for treatment of possible co-infection with anaplasmosis. She was continued on valacyclovir 500 mg twice daily for HSV suppression. The patient had a vaginal delivery of a healthy 2990 gram male infant. Postpartum, her antibiotics were switched to azithromycin 250 mg by mouth daily for 10 days and atovaquone 750 mg by mouth twice daily for 14 days for treatment of her babesiosis, and to doxycycline 100 mg by mouth twice daily for 14 days for treatment of potential co-infection with anaplasmosis. She made a full recovery. The infant was evaluated and had a normal laboratory evaluation including a complete blood count, liver function tests, and a negative polymerase chain reaction for *Babesia microti*.

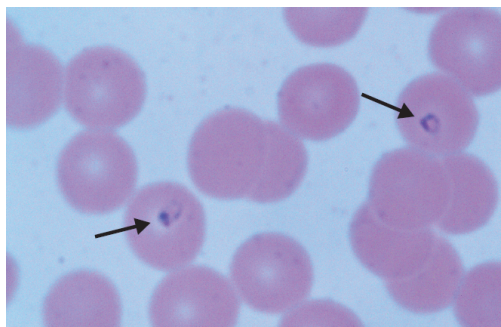


Figure 1: Abnormal peripheral blood smear.

Discussion

Babesia microti infection is a rarely diagnosed cause of hemolysis during pregnancy, which is likely due to its infrequent diagnosis and its similar presentation to preeclampsia with severe features and HELLP syndrome. The relationship between HELLP syndrome and preeclampsia with severe features is controversial but both may be associated with serious hepatic manifestations, including infarction, hemorrhage, and rupture. Approximately 85% of HELLP cases have hypertension and proteinuria but it is not surprising to not find either or both in HELLP syndrome [1]. HELLP syndrome is not managed expectantly; prompt delivery is recommended. A short delay in delivery of 24-48 hours to administer corticosteroids for fetal lung maturity is suggested if the maternal and fetal status is stable in pregnancies from fetal viability to 33 6/7 weeks of gestation. Magnesium sulfate is administered for seizure prophylaxis and platelet transfusion may be indicated [2]. Platelet transfusion is recommended for actively bleeding patients and if the platelet count is less than 20 K/ μ L. However, this threshold is controversial. For patients undergoing cesarean delivery, some experts recommend a preoperative platelet count greater than 40 K/ μ L to 50 K/ μ L [1].

Babesiosis is caused by *Babesia microti*, a tick-borne protozoan parasite. It is prevalent in and near forested areas of New England and the midwestern United States during the spring and summer months [3]. Patients with babesiosis typically present with non-specific symptoms such as fever, malaise, headache and arthralgias. The clinical presentation can range from mild to severe. Complications of babesiosis include acute respiratory distress syndrome, disseminated intravascular coagulation, congestive heart failure, renal failure, and death [4]. Laboratory abnormalities seen in severe babesiosis include anemia, thrombocytopenia, elevations in serum aminotransferase concentrations, and leukopenia [5]. Similar to malaria, babesiosis infection results in hemolysis due to replication of intraerythrocytic ring forms of the parasite. Therefore, it is thus not surprising that the initial diagnosis of our patient was thought to be HELLP syndrome.

The preferred treatment for non-severe babesiosis in adults is atovaquone plus azithromycin, and for severe babesiosis is clindamycin plus quinine. Clindamycin and quinine are preferred in pregnancy because they have better placental penetration and are thought to more effectively reduce vertical transmission. However, atovaquone and azithromycin, the standard treatment for non-severe babesiosis in adults, has been used to treat malaria in pregnancy with no increased

risk of birth defects or stillbirth [6]. Of note, very few cases of vertical transmission of babesiosis have been reported and the risk is unknown [7]. The patient accordingly was started on clindamycin 600 mg by mouth three times daily and quinine 650 mg by mouth three times daily. About 1% of patients with babesiosis can be co-infected with another tick-borne illness such as anaplasmosis, ehrlichiosis, or Lyme disease [3]. As this patient's leukopenia was concerning for co-infection with anaplasmosis, she was started on rifampin 300 mg by mouth twice daily for potential anaplasmosis.

Our case is the second reported case of babesiosis imitating HELLP syndrome. In July 2016, Gulerson et al. presented a case of a term patient with a history of preeclampsia who presented with symptoms and laboratory abnormalities concerning for HELLP syndrome. She underwent a repeat cesarean delivery and after delivery, was diagnosed incidentally with *Babesia microti* on a peripheral blood smear. She had an uncomplicated postoperative course with normalization of her laboratory abnormalities and the infant had a negative evaluation for *Babesia microti* [8].

Because our patient presented at term, was clinically stable, and had an early correct diagnosis with initiation of appropriate treatment, she and her infant were fortunate to have excellent outcomes. We question what would have happened had this patient presented earlier during pregnancy, for example at 28 weeks of gestation, and we were unaware or uninformed of the peripheral blood smear. She may have developed complications from undiagnosed *Babesia* infection; additionally, she may have had an unnecessary cesarean section for worsening clinical status remote from delivery. The infant would have been at risk for complications of prematurity from an iatrogenic preterm delivery. Had transplacental transmission occurred, the infant would also have been at risk for complications from undiagnosed babesiosis. Our case demonstrates that *Babesia microti* infection should be on the differential for imitators of HELLP syndrome to optimize treatment and outcomes.

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