



Brief Report

CONGENITAL BABESIOSIS FROM MATERNAL EXPOSURE: A CASE REPORT

Shweta Iyer, MD and Karen Goodman, MD

Division of Pediatric Emergency Medicine, NYU Langone Medical Center, New York, New York

Reprint Address: Shweta Iyer, MD, Division of Pediatric Emergency Medicine, NYU Langone Medical Center, 550 1st Avenue, New York, NY 10016

Abstract—Background: Babesiosis is a disease caused by parasites that infect red blood cells; in infants it can be acquired from tick bites, blood transfusions, or congenitally via vertical transmission. It can present with thrombocytopenia, fevers, and parasitemia. **Case Report:** A case of vertically transmitted babesiosis in an infant is described. Thrombocytopenia and parasitemia > 4% developed in this well-appearing infant. The diagnosis was made by history and blood smear in both infant and mother, and the patient recovered fully with oral antibiotics. **Why Should an Emergency Physician Be Aware of This?:** Congenital babesiosis has been reported infrequently in the literature and is reviewed here. It is important to consider congenital tick-borne illness in endemic areas as a cause for febrile thrombocytopenia in neonates. © 2018 Elsevier Inc. All rights reserved.

Keywords—babesiosis; congenital; parasitemia

INTRODUCTION

Babesiosis is a disease caused by microscopic parasites that infect red blood cells (1). While babesiosis is relatively common in endemic areas, much less is known about congenital babesiosis. We present a case of an infant with congenital babesiosis after his mother was diagnosed with a tick-borne illness in her third trimester of pregnancy.

CASE REPORT

A 6-week-old male with no medical history presented to the pediatric emergency department (ED) with a fever for

1 day. His mother reported that he had a fever since the morning, with a maximum rectal temperature of 39°C (102.2°F). At that time, he went to the pediatrician who confirmed that he was febrile, and advised the family to bring him to the ED. The patient additionally had symptoms of nasal congestion, rhinorrhea, decreased oral intake, and increased sleepiness. The patient had a 3-year-old brother at home who was sick with similar symptoms. Per the patient's mother, he continued to breastfeed every 3 h supplemented with formula, and was producing normal stools and urine output. The patient had not traveled recently, and all vaccines were up to date. His mother reported no vomiting or diarrhea. Additionally, she reported no signs of respiratory distress.

Regarding birth history, he was born full-term via vaginal delivery after an uncomplicated pregnancy. There had been no medical complaints until this visit. Of note, his mother reported being treated for Lyme disease in her third trimester of pregnancy; she initially presented with erythema migrans at 8 months and was treated with penicillin.

In the ED, our patient's physical examination was normal except for evidence of nasal congestion and crusting around the bilateral nares. Bloodwork and urine were obtained for a partial rule-out sepsis workup. Initially, it was anticipated that if the patient continued to be well-appearing and his laboratory results were reassuring, as per the guidelines for workup for a febrile neonate 30–60 days old, he would go home with pediatrician follow-up the next day.

The patient's complete blood count (CBC) returned with white blood cell count of 7,000/ μ L, hemoglobin of

11.6 g/dL, and platelet count of 54,000/ μ L. A blood smear showed evidence of parasitemia, with an initial parasitemia count of 4.8%. Given the abnormal blood smear, a specific blood parasite level was ordered, which showed 1:320 IgM antibodies to *Babesia microti*. The remainder of the patient's laboratory results were normal.

The patient was admitted to the pediatric floor and started on oral atovaquone and azithromycin, which he received for a total of 10 days as per the infectious disease team's recommendations. The patient also received a lumbar puncture on the floor, with no growth of any organisms in the cerebrospinal fluid. Multiple CBCs and parasite smears were sent during the patient's 5-day stay on the floor, with resolving thrombocytopenia and parasitemia. On discharge, the patient's platelet levels were 175,000/ μ L and the parasitemia level was < 0.1%. The patient's anemia remained stable, and he was afebrile and well-appearing throughout his stay. The patient's mother was tested for babesiosis during the hospital stay for confirmation. Her laboratory results showed evidence of prior babesiosis with > 1:256 IgG antibodies to *Babesia*, and no active parasitemia or indication for treatment.

DISCUSSION

Our patient presented with febrile thrombocytopenia predominantly, which led to the diagnosis of babesiosis. The differential of pediatric febrile thrombocytopenia is varied. While tick-borne infections can cause this, more common causes of febrile thrombocytopenia include viral infections, bacterial infections, and human immunodeficiency virus. Additionally, given that fever is a systemic symptom, it is important to consider other systemic disease processes, such as malignancy or autoimmune disorders. Other parasitic infections should be considered as well, such as malaria, depending on the travel history. However, most of these other illnesses present with other specific symptoms, which may help guide the diagnosis.

Babesiosis is an infectious disease typically caused by a tick bite. *Babesia microti* is the most common agent of babesiosis in the United States, and it is endemic in the Midwest and the Northeast regions (2). The incubation period after a tick bite is 1–4 weeks, and the bites typically happen between May and September (3,4). In infants, the main causes of babesiosis are congenital, acquired, and transfusion-related (1).

Co-infection with other tickborne illnesses is possible, with some studies reporting up to two thirds of patients with babesiosis also being infected with Lyme (5,6). In this case, the patient's mother was co-infected with Lyme and babesiosis, and unknowingly passed on babesiosis to her child, but not Lyme.

Asymptomatic infection with babesiosis may be common, especially in immunocompetent children (7).

Asymptomatic parasitemia can last for months to years if unnoticed (8). If mild to moderate disease is present, the most common symptoms are fever, fatigue, diaphoresis, headache, and myalgia, with a parasitemia count usually < 4% (3). Severe disease, including life-threatening disease, is more common in immunocompromised patients and includes similar symptoms with a larger degree of severity, accompanied by possible diarrhea and vomiting (5).

Laboratory diagnostic features of babesiosis include thrombocytopenia, hemolytic anemia, and elevated aminotransferases with the relevant exposure (2). Hyperbilirubinemia may also occur. Neutropenia may be a more common finding in congenital babesiosis (9). Microscopy on a blood smear, polymerase chain reaction, and serology can be used to definitively diagnosis babesiosis, and can be performed on both mother and child in cases of congenital babesiosis (3). The treatment for confirmed babesiosis is a 7- to 10-day course of azithromycin and atovaquone given orally for mild to moderate disease (2). Severe disease may require i.v. antibiotics, typically i.v. clindamycin and quinine (1,8). Exchange transfusion is reserved as a last resort for patients with severe disease and symptoms or high parasitemia counts (>10%) (1). Complications are rare, and typically occur in patients hospitalized with babesiosis. The most common complications include disseminated intravascular coagulation and acute respiratory distress syndrome (8).

Congenital babesiosis is less common, but a handful of cases have been reported in the literature (1,10–12). Causes include blood transfusions or vertical transmission. Blood transfusion-related congenital babesiosis is more common in preterm neonates because they typically require multiple transfusions during their hospitalization, and it has an incubation period lasting from 1 week to more than 2 months (13). When congenital babesiosis occurs with neonatal blood transfusions, the clinical presentation can be varied in the affected infants, with premature or sicker infants more likely to suffer from complications (13). The treatment is the same as for non-congenital babesiosis.

Diagnosis for vertically transmitted babesiosis is made from a blood smear and serology from both the infant and the mother, and there is usually a history of a maternal tick bite (1,10). In our case, given the history of the maternal tick bite during pregnancy and subsequent maternal IgG antibodies to *Babesia* in the setting of neonatal *Babesia* parasitemia, the diagnosis of vertically transmitted babesiosis in the neonate was confirmed. Treatment is similar to treatment of non-congenital babesiosis, with neonates more likely to receive i.v. antibiotics (1). As per the case reports, most patients with congenital babesiosis from vertical transmission recover well without complications.

WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?

While febrile neonates are often seen in the ED, it is important to be aware of the febrile thrombocytopenic neonate, who may present a diagnostic and therapeutic challenge if not worked up appropriately. It is also important to consider congenital tick-borne illness in endemic areas as a cause for febrile thrombocytopenia in neonates.

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