ANSWER TO THE PHOTO QUIZ

Philip A. Mackowiak, Section Editor

An 84-Year-Old Woman with Fever and Dark Urine
(See page 278 for the Photo Quiz)

Figure 1. Wright Giemsa-stained thin prep peripheral blood smears (original magnification, ×1000) demonstrating appliqué (B) and headphone (C) morphologies, which are characteristic of Plasmodium falciparum, and extracellular ring forms (D), which are characteristic of Babesia microti.

Diagnosis: Babesiosis due to Babesia microti infection from a tick bite.

Peripheral blood smear from the state laboratory showed intraerythrocytic ring forms as well as appliqué and headphone morphologies (figure 1B and 1C). Although some of the ring and appliqué forms were consistent with the morphological characteristics of Plasmodium falciparum, the patient had not traveled to an area where infection with P. falciparum was likely. Rare cases of Plasmodium vivax but not P. falciparum are reported in Quintana Roo, the state in Mexico where Cozumel is located. Although there have been recent outbreaks of P. falciparum infection in the Caribbean (i.e., Dominican Republic, the Bahamas, and Jamaica), Florida and the Cayman Islands are not areas in which malaria is endemic. In addition, B. microti infection was considered because of the travel history to an area where Babesia species are endemic (Minnesota) and because of a history of blood transfusions.

Her blood smear showed many appliqué forms that are commonly seen in P. falciparum infection but are typically not characteristic of Babesia. Further examination of the blood smears at the US Centers for Disease Control and Prevention showed several extracellular ring forms that are more commonly observed with Babesia species infection (figure 1D). To determine conclusively the genus and species of the infecting organism, further diagnostic testing with polymerase chain reaction (PCR) was performed. PCR results were positive for B. microti infection and negative for all 4 Plasmodium species.

There were 2 possible sources of the patient’s babesiosis: tick-borne transmission or transfusion transmission. To evaluate the latter, all donors of blood products received by the patient were contacted and tested for B. microti antibodies. All donors were negative for such antibodies. Therefore, it is likely that the patient acquired babesiosis from a tick bite while visiting Minnesota. The patient recalled no tick bite; however, recall of a tick bite does not always accompany tick-borne diseases [1, 2]. The typical incubation period for babesiosis after a tick bite is 1–6 weeks [3].

The number of cases of babesiosis reported annually in Min-
Minnesota has increased in recent years. Eighteen cases were reported in 2006, compared with a median of 3 reports per year from 1992 through 2004. Onset of illness in patients diagnosed with babesiosis in Minnesota is most common in July and August, and the risk of infection is highest in the east-central and north-central regions of the state [4].

Although Babesia species infection is often asymptomatic or mild, it can be fatal in certain populations, such as among elderly and immunocompromised persons; therefore, accurate diagnosis and timely treatment are essential. Because Babesia species can often be confused with *P. falciparum* on peripheral blood smear analysis, further diagnostic testing in the form of PCR or serologic immunofluorescence assay is warranted if epidemiologically supported. Because of the diagnostic uncertainty when the patient was acutely ill, this patient was treated with quinine and clindamycin and made a full recovery. The combination of clindamycin and quinine for 7–10 days is the recommended treatment for those with severe illness caused by Babesia infection; atovaquone and azithromycin is another recommended regimen [5].

Acknowledgments

Financial support. Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists; the Centers for Disease Control and Prevention Cooperative Agreement U60/CCU007277.

Potential conflicts of interest. All authors: no conflicts.

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References