

## CLINICAL PRACTICE

## Clinical Images

## Babesiosis-Associated Warm Autoimmune Hemolytic Anemia



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**KEY WORDS:** babesiosis; autoimmune hemolytic anemia; peripheral-blood smear; clinical image.

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An 84-year-old man with dementia presented with 4 months of fevers, night sweats, and dark urine. He lived in Central Pennsylvania and previously underwent splenectomy following a motor vehicle accident. Physical exam showed scleral icterus, palmar crease pallor, and jaundice. Laboratory studies showed hemolytic anemia and a positive direct antiglobulin test for warm autoantibodies. Serum parasitemia levels were 5% with elevated *Babesia microti* IgG and IgM titers. Peripheral-blood smear was consistent with asplenia and warm autoimmune hemolytic anemia. *Babesia* extracellular ring forms (Fig. 1, red arrowhead) and intracellular ring forms were present (Fig. 2, thin arrows). He was diagnosed with warm autoimmune hemolytic anemia (WAHA) triggered by *B. microti* in the setting of asplenia and chronic infection.

Babesiosis is associated with two mechanisms of hemolytic anemia. Non-immune-mediated hemolytic anemia occurs from merozoite egress and resolves with antibiotic treatment. WAHA, however, is a late complication that can develop 2 to 4 weeks following treatment, especially in asplenic patients.<sup>1,2</sup> The peripheral-blood smear provided valuable insight into multiple processes: Howell-Jolly bodies indicated asplenia, nucleated red blood cells signaled hemolysis, and spherocytes pointed to WAHA. He was treated with prednisone, azithromycin, and atovaquone. After 4 months, his hemoglobin normalized and parasite levels were undetectable.

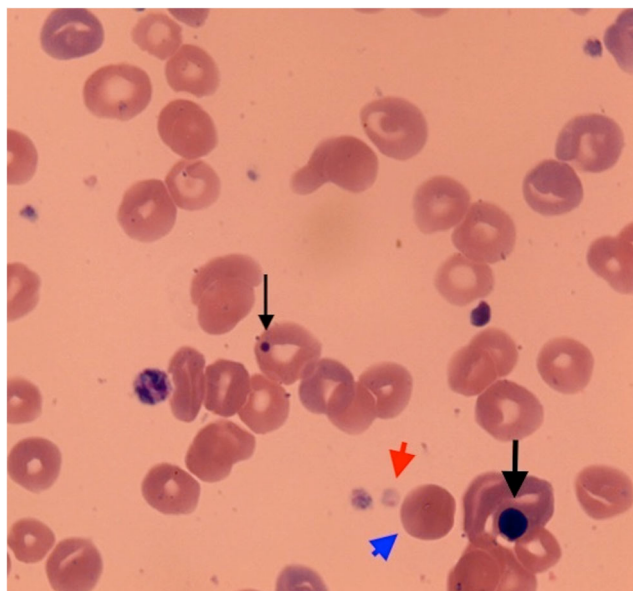
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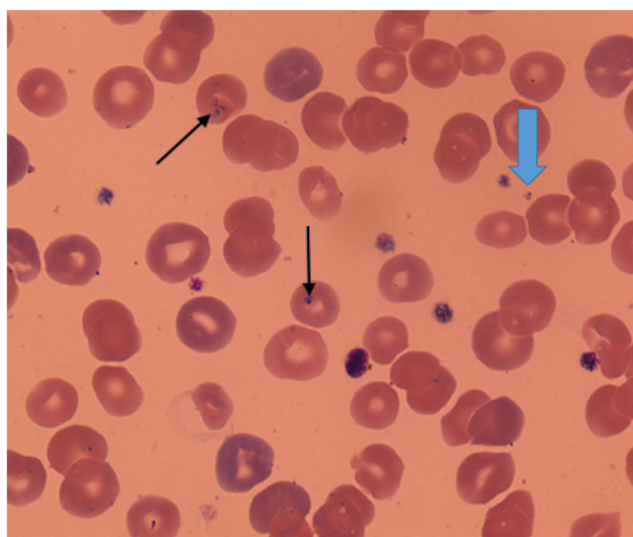
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**Figure 1** Peripheral-blood smear showing a Howell-Jolly body (thin arrow) indicating asplenia, *Babesia microti* extracellular ring form (red arrowhead), spherocytes (blue arrowhead), and a nucleated red blood cell (thick arrow).



**Figure 2** Peripheral-blood smear demonstrating both *Babesia microti* intracellular (thin arrows) and extracellular (thick blue arrow) ring forms.

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**Compliance with Ethical Standards:**

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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