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Case Report: Babesiosis Presenting to the Emergency

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Case Report: Babesiosis Presenting to the Emergency Department

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Introduction:

Babesiosis is a tick borne illness caused by the parasitic protozoa *Babesia* transmitted by the Ixodes tick. *Babesia* infects the red blood cell of its host and requires the cell for its replication. It is a disease process that can range from asymptomatic infection to organ failure and death. This case presentation reviews a 68 year old male who presented to the emergency department with flu like symptoms and was found to have babesiosis

Case Presentation:

58 year old male with a history of COPD, HTN, GERD presented to the emergency department for evaluation of 7 days of worsening fatigue, chills, night sweats and abdominal discomfort. He was seen at an urgent care 4 days prior, diagnosed with URI and prescribed Medrol dose pack and Zyrtec. He again presented to urgent care 2 days later and was prescribed tesselon pearls. On the day he presented to the ED he has had persistent symptoms despite taking the medication as prescribed.

On initial evaluation he stated symptoms felt like the flu though were lasting longer in duration than expected. Chart review from prior urgent care visit indicated he was covid and flu negative at that time.

Vital signs were significant for fever of Tmax 100.8 and heart rate 101. BP 169/70. RR 16 98% on RA. His physical exam was significant for an unwell looking individual with diffuse abdominal tenderness on exam. No rashes noted. A sepsis work up was performed. Cbc and diff was flagged by the lab for abnormal cell morphology. A peripheral smear was then performed. Patient was found to have annular rings on peripheral blood smear with parasitemia 0.9%. He was also found to have hemoglobin of 11, platelet count of 110, T bili 1.9 and LDH 348. He did not have a leukocytosis. An abdominal scan showed mild splenomegaly with multiple focal irregular patchy hypodensities scattered within splenic parenchyma. No interruption of splenic capsule.

He denied any recent travel to tropical settings though did endorse a camping trip several weeks prior in Pennsylvania. Initial thoughts were that patient could have malaria as annular rings are often seen with such disease. However after further consideration patient's lack of travel to tropical environment made this diagnosis less likely. Malaria antigen screen was also negative.

Babesiosis was then considered as the cause. Infectious disease was consulted who recommended azithromycin and atovaquone. A *Babesia* antibody panel was also drawn which subsequently was positive for both IgG and IgM. Patient was admitted to the hospital for further evaluation and resolution of symptoms.

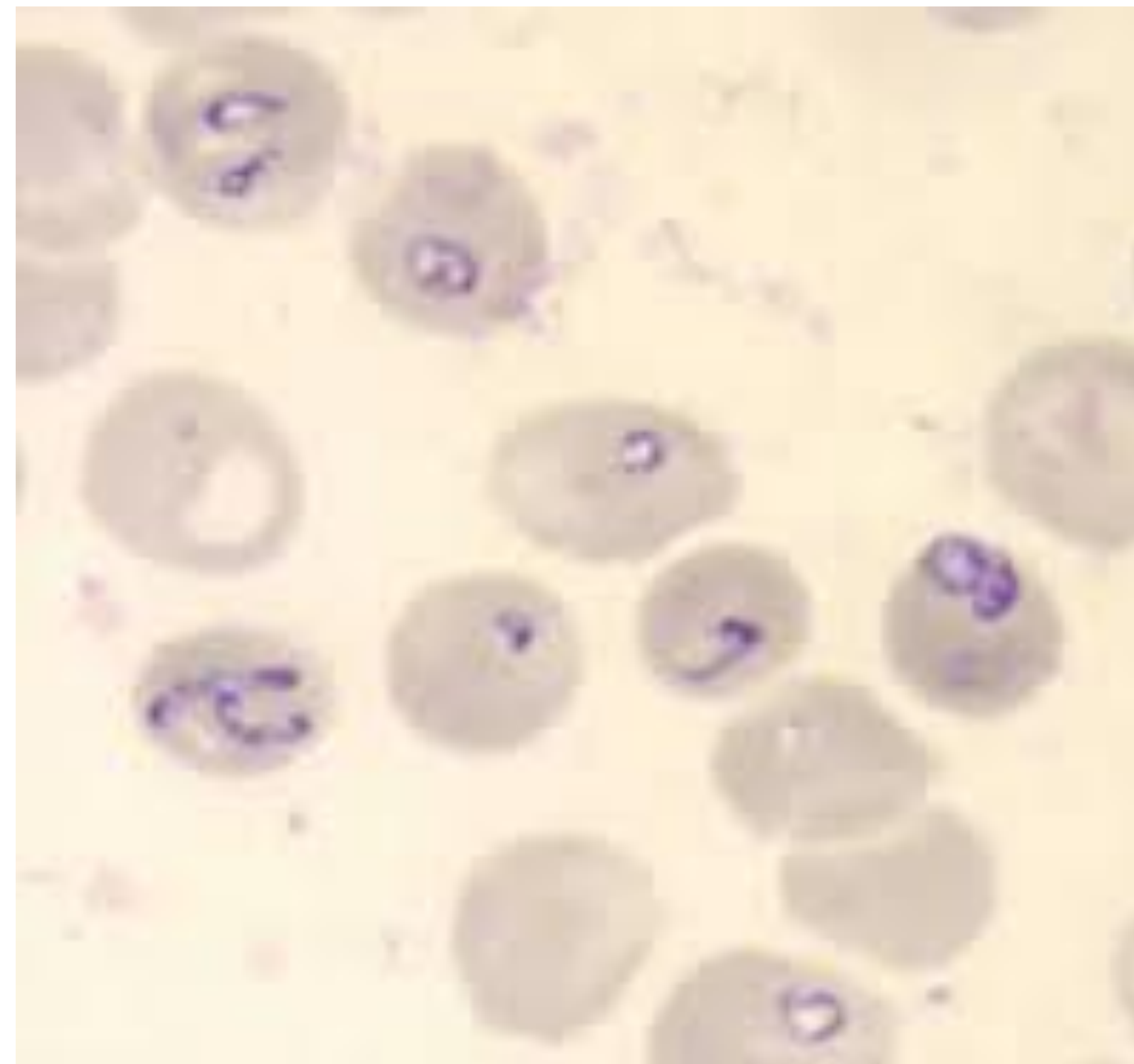


Figure 1: Peripheral blood smear showing findings of babesiosis. (Bing.com)

References:

1. "CDC - Babesiosis". Centers for Disease Control and Prevention.
2. Vannier E, Krause PJ (21 June 2012). "Human Babesiosis" (PDF). *New England Journal of Medicine*. 366 (25): 2397–2407. doi:10.1056/NEJMra1202018. PMID 22716978. S2CID 205116383.
3. Wormser GP, Dattwyler RJ, Shapiro ED, et al. (November 2006). "The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America" (PDF). *Clin. Infect. Dis.* 43 (9): 1089–134. doi:10.1086/508667. PMID 17029130. Archived (PDF) from the original on 2020-07-26.
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Discussion:

Babesiosis is considered endemic in several states in the Northeast including New Jersey. Most infections are asymptomatic however some patients will develop flu like illness like our patient did. Patients who are immunocompromised, elderly or asplenic run the risk of worst outcomes and potential fatality. These poor outcomes are usually due to ineffective cellular immunity as antibody production by B cells is integral to appropriate host clearing. (1)

Associated findings with this illness include hemolytic anemia and thrombocytopenia as found with this patient. These findings are secondary to intravascular hemolysis. This occurs due to the parasite using the red blood cell for replication. They will rupture as the *Babesia* leaves the cell causing the hemolytic anemia. Splenic sequestration of the infected cells will also contribute to said findings. Complications of Babesiosis are multifactorial; excessive synthesis of cytokines by the host can cause ARDS. Other complications such as renal failure and splenic rupture can be caused by intravascular sequestration of leukocytes and infected erythrocytes causing obstruction of microvasculature and tissue hypoxia. Conversely, asplenic patients will often fair worst as the spleen is the main defense for ridding the body of parasite load. (2)

Diagnosing Babesiosis is generally done by thin smear of peripheral blood. This will show trophozoites presenting as pleomorphic ring forms (round, oval, pear shaped or amoeboid) Although rare, the finding of a Maltese cross made of a tetrad of merozoites is pathognomonic for Babesiosis. (3)

Standard treatment for a patient with Mild Babesiosis (Parasitemia <4%) is with PO Azithromycin and Atovaquone for 7-10 days. For patients with Severe Babesiosis (Parasitemia >4%) Azithromycin is given by IV. Duration of treatment does not change. Patients who are found to have relapsing or persistent *Babesia* in blood despite standard treatment will require 6 weeks of treatment. RBC exchange transfusion is indicated in patients presenting with Parasitemia >10% and anemia with hemoglobin <10. Exchange transfusion may also be considered for patients with pulmonary, hepatic or renal dysfunction. (4)

Lab findings consistent with Babesiosis include anemia, thrombocytopenia, elevated LDH, hyperbilirubinemia and elevated transaminases. These findings are due to the intravascular hemolytic process from the parasite load and reproductive cycle within the RBCs.

Conclusions:

Babesiosis is a disease process that can remain asymptomatic or in extreme cases can be lethal. As the climate changes in the Northeast, we can expect to see more of this pathology as the shorter winters lead to greater proliferation of both the tick and parasite. Clinicians should be suspicious of patients with flu like symptoms who are test flu negative or who have findings of a hemolytic anemia living in endemic areas.