

Clinical pathology selected abstracts

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RT-PCR detection of *B. microti* parasites using BMN antigens as amplification targets

October 2018—*Babesia microti* infection, which is transmitted through the bite of an infected tick, is a growing health concern and continues to be a threat to the blood supply, with 22 states having reported cases of babesiosis in 2014. While most healthy adults with *Babesia* infection are asymptomatic or present with mild symptoms, including fever, fatigue, and anemia, babesiosis can be severe or fatal in neonates, the elderly, and immunosuppressed individuals. *Babesia* infection can also be transmitted through transfusion. An FDA-licensed test is available for *B. microti* antibody as well as *B. microti* PCR. However, these tests have not been routinely implemented for blood donor screening. An investigational RNA-based nucleic acid testing assay is being used in some endemic areas and its use is likely to expand in the future based on recommendations from the AABB Working Group. The authors conducted a study to investigate a highly sensitive molecular assay to detect *Babesia* for the purposes of patient diagnosis and to identify and defer clinically silent but parasitemic blood donors. They reported the development and analytical and clinical characterization of an RT-PCR assay for detecting *B. microti* genomic DNA in whole blood. The investigators evaluated the detection of *Babesia* parasites using two targets—the traditional 18S ribosomal subunit gene (*Bm18S*) and members of the abundant BMN family of seroreactive antigens (*BmBMN*). A probit analysis showed an analytical sensitivity of 30.9 parasites/mL for 18S amplification and 10 parasites/mL for BMN amplification. The BMN primer set also demonstrated superior sensitivity for serial dilution panels prepared from *Babesia*-infected blood samples. The authors concluded that their data demonstrate that RT-PCR detection of the BMN family of seroreactive antigens is a sensitive and superior assay to detect *B. microti* in donor whole blood samples. This may enhance the early detection of donors with a low-grade chronic *Babesia* infection and will help improve the safety of the blood supply.

Grabias B, Clement J, Krause PJ, et al. Superior real-time polymerase chain reaction detection of *Babesia microti* parasites in whole blood utilizing high-copy BMN antigens as amplification targets. *Transfusion*. 2018;58:1924-1932.

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Testing for tick-borne infections at a large Northeastern academic medical center

Tick-borne infections are caused by many bacterial, viral, and parasitic pathogens across various regions of the United States. The most commonly reported tick-borne infections (TBIs) in Massachusetts are Lyme disease, babesiosis, and anaplasmosis. The number of reported cases of Lyme disease has been steadily increasing over the past two decades, with approximately 30,000 cases of Lyme disease reported to the CDC each year. However, a survey of laboratory test results from seven large commercial reference laboratories using data from 2008 showed an annual rate of Lyme disease between 244,000 and 444,000, which is about eight to 14.8 times the rate based on surveillance data reported to the CDC. The authors studied the testing patterns for TBI at Massachusetts General Hospital to better understand the testing volumes, rates of positivity, and changing patterns of testing modalities over time. They obtained testing data during an 11-year time frame using searchable data from a laboratory information system archive. The results showed that testing for TBI increased 5.3-fold during an 11-year period, and the number of positive test results increased threefold. Annual rates for Lyme serology positivity varied from 14 to 29 percent and for Western blot confirmation from 26 to 48 percent. Of interest, test volumes and the number of positive results increased for all TBI endemic to the region. The authors reported that these results may reflect an increase in the incidence of TBI or increased awareness of these infections, or both, prompting additional

test requests for TBI. They concluded that their results confirm national trends suggesting increasing rates of TBI and substantially increased testing. The authors noted that two test utilization management initiatives that it implemented in recent years, through a collaboration with its division of infectious diseases, helped drive improved testing methodology and test utilization.

Rudolf J, Baron J, Branda J, et al. Laboratory testing for tick-borne infections in a large Northeastern academic medical center: an 11-year experience. *Am J Clin Pathol*. 2018. doi:10.1093/ajcp/aqy067.

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