You can't count on testing of engorged ticks

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Gasmi and colleagues found that you cannot always rely on the testing of engorged ticks to help determine possible exposure to Borrelia burgdorferi (Bb), the causative agent of Lyme disease. The Quebec study, "Analysis of the human population bitten by Ixodes scapularis ticks in Quebec, Canada: Increasing risk of Lyme disease," analyzed 4,596 *I. scapularis* ticks removed from humans in Quebec between 2008 and 2014. [1]

According to investigators, 24.9% of the non-engorged blacklegged ticks (*I. scapularis)* were infected with Bb. This is alarming, given that this figure is nearly half the rate reported in the Northeastern USA — an area hyperendemic for Lyme disease. [1]

Engorged ticks were expected to have an even higher rate of Bb infections, but instead had a much lower prevalence. "The analysis of the prevalence of B. burgdorferi infection in *I. scapularis* by engorgement state revealed that 24.9% of unengorged ticks were positive," stated Gasmi, from the Institut National de Santé Publique du Québec, "while 8.9% of engorged ticks were positive." [2] These findings are consistent with those from another Canadian study, which collected ticks from humans, she added. [3]

It is still unclear why testing of engorged ticks is not accurately revealing the higher prevalence of Bb infection. The authors attribute it possibly to the presence of inhibitors in the blood meal [4] or problems with the collection and transportation of engorged ticks.

"Perhaps this was due to simpler reasons such as the greater likelihood that unengorged ticks remained alive up to DNA extraction, while engorged ticks may well have died days or weeks before testing," noted Gasmi.

In other words, tick testing isn't always a reliable tool in determining your risk of infection. If an engorged tick is removed and tested, it is likely to be negative for the Borrelia burgdorferi bacteria. This is disappointing, given that engorged ticks are more likely to transmit Lyme disease.

References:

1. Schwan TG, Piesman J. Vector interactions and molecular adaptations of lyme disease and relapsing fever spirochetes associated with transmission by ticks. *Emerg Infect Dis.* 2002;8(2):115-121.
2. Gasmi S, Ogden NH, Leighton PA, Lindsay LR, Thivierge K. Analysis of the human population bitten by Ixodes scapularis ticks in Quebec, Canada: Increasing risk of Lyme disease. *Ticks Tick*

Borne Dis. 2016.
3. Dibernardo A, Cote T, Ogden NH, Lindsay LR. The prevalence of Borrelia miyamotoi infection, and co-infections with other Borrelia spp. in Ixodes scapularis ticks collected in Canada. *Parasit Vectors.* 2014;7:183.
4. Wilson IG. Inhibition and facilitation of nucleic acid amplification. *Appl Environ Microbiol.* 1997;63(10):3741-3751.

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