Lyme disease no longer fits the 'one microbe, one disease Germ Theory'

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But with the emergence of different species of spirochetes and tick-borne co-infections, the one microbe, one disease Germ Theory has fallen apart. The growing number of concurrent tick-borne infections, such as Lyme disease and Babesia, demonstrates the involvement and concern of multiple microbes. One study found that an infection with both Lyme disease and Babesia increased the severity and duration of illness. [1]

Researchers in Finland described the frequency of combinations of pathogens in patients with Lyme disease.

They compared the Centers for Disease Control and Prevention (CDC) acute cases (n = 43); CDC late cases (n = 43); CDC negative cases (n = 46); post-treatment Lyme disease Syndrome [PTLDS (n = 31)]; immunocompromised (n = 61); and unspecific (n = 31) to healthy controls (n = 177).

The researchers looked at the immune response to a number of pathogens. Patients were tested for their "immunoglobulin M (IgM) and G (IgG) responses against 20 microbes associated with TBDs [tick-borne diseases]," writes Garg from the University of Jyväskylä in Finland. [2]

Microbes included: *Borrelia burgdorferi* sensu stricto, *Borrelia afzelii*, *Borrelia garinii*, *Borrelia burgdorferi* sensu stricto persistent form, *Borrelia afzelii* persistent form, *Borrelia garinii* persistent form, *Babesia microti*, *Bartonella henselae*, *Brucella abortus*, *Ehrlichia chaffeensis*, *Rickettsia akari*, Tick-borne encephalitis virus (TBEV), Chlamydia pneumoniae, Chlamydia trachomatis, Coxsackievirus A16 (CVA16), Cytomegalovirus (CMV), Epstein-Barr virus (EBV), Mycoplasma pneumoniae, Mycoplasma fermentans, and Human parvovirus B19 (HB19V).

The researchers found numerous immune responses to these microbes. In fact, 65% of patients with a tick-borne disease produced immune responses to multiple organisms.

"Our findings recognize that microbial infections in patients suffering from [tick-borne diseases] do not follow the one microbe, one disease Germ Theory as 65% of the TBD patients produce immune responses to various microbes," the authors write.

They suggest, "A paradigm shift is required in current healthcare policies to diagnose [tick-borne diseases] so that patients can get tested and treated even for opportunistic infections."

The importance of each microbe is unclear. The role of individual pathogens needs to be examined in future studies.

Related Articles:

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References:

1. Krause PJ, Telford SR, 3rd, Spielman A, et al. Concurrent Lyme disease and babesiosis. Evidence for increased severity and duration of illness. Jama. 1996;275(21):1657-1660.
2. Garg K, Merilainen L, Franz O, et al. Evaluating polymicrobial immune responses in patients suffering from tick-borne diseases. Sci Rep. 2018;8(1):15932.

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