

Co infections must be considered in tick-bite patients.

The Anaplasmataceae are already being diagnosed as tick-bite infections, and co-infections, by PHE microbiologists: it is hoped that infectious disease consultants in England and Wales are aware of the possibility.

However, it is patient experience that testing for the infection is not routine, despite patients presenting with signs and symptoms of a febrile illness - even in those with a known tick bite.

This must change, especially because climate warming means that all vector-borne diseases will increase in incidence in the next decade.

It has been well known for 40 years at least, that ticks carry and may transmit to humans, a wide variety of pathogens, including nematodes, trypanosomes, and Rickettsiae, as well as a number of viruses(1).

A recent review of the relevance to public health by Professor Christian Peronne deserves careful perusal (2).

Bartonellosis is one of the most frequently diagnosed infections found as a co-infection in UK Lyme disease patients. Yet we know that diagnosis, especially after the acute phase, can be a difficult task. It is our experience that chronically infected patients are not offered tests. Even when tested, most are negative by UK methods, yet they have been found to be positive for Bartonella species by non-UK laboratories.

Ticks play a role in the natural cycles of some of the bartonellae including those pathogenic for humans. Consequently, bartonellosis should be included in the differential diagnosis for patients exposed to tick bites(3). Health authorities must take into account the possibility of bartonellosis in persons exposed to tick bites, and the Bartonella species recognised as tick-borne pathogens (4).

Bartonella infection causes symptoms which are similar to LB, in many ways including neurological signs, but the therapeutic treatment is different from that used for borreliosis(5, 6). Thus an accurate diagnosis is crucial for successful treatment, and patient survival and quality of life.

Babesiosis

German scientists A. Hildebrandt, J. S. Gray and K.-P. Hunfeld, in their report "Human Babesiosis in Europe: what clinicians need to know" (7) state: " Although best known as an animal disease, human babesiosis is attracting increasing attention as a worldwide emerging zoonosis. Humans are commonly infected by the bite of ixodid ticks. Rare ways of transmission are transplacental, perinatal and transfusion-associated. Infection of the human host can cause a very severe host-mediated pathology including fever, and hemolysis leading to anemia, hyperbilirubinuria, hemoglobinuria and possible organ failure.

In recent years, apparently owing to increased medical awareness and better diagnostic methods, the number of reported cases in humans is rising steadily worldwide. Hitherto unknown zoonotic Babesia spp. are now being reported from geographic areas where babesiosis was not previously known to occur, and the

growing numbers of travelers and immunocompromised individuals suggest that the frequency of cases in Europe will also continue to rise."

Babesia, though relatively rarely diagnosed in the UK other than in cattle, has caused canine deaths in Leeds and Nottingham this year (2016) and there are many cases of debilitating human illness. A one-hour discussion on the UK's largest Lyme forum revealed 5 fully-diagnosed patients responding, within that short time on Wednesday 16th March, 9 am - 10 am, to state that they had acquired Babesiosis in the UK. No one knows how many human deaths may have been attributable to Babesiosis, because there has been no surveillance in potential clinical cases which could have been due to the infection. For example, stroke patients are not screened for this piroplasm, yet blood dyscrasias from the infection are bound to have effects on blood clotting etc.

Within the last three decades a dramatic rise in numbers of reported transfusion-associated cases in the US has been documented, with at least 12 fatalities and 160 cases [8, 9]. Outside America only two other cases of transfusion-transmitted babesiosis had been reported by 2013, one from Japan that involved a *B. microti*-like parasite [10] and one from Germany caused by *B. microti* (11).

VIRAS urges the NICE guideline committee, and all health protection agencies, to include Babesia from tick bites into the scope of the Lyme guidelines. It is a clear threat to the health and safety of British citizens, not just through transmission through tick bites, but as a potential blood supply contaminant.

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