
New pathogens, new challenges

EDITORIAL

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Gunnar Hasle (born 1954), specialist in infectious diseases, with a diploma in tropical medicine and medical entomology, and a doctorate on ticks carried by migratory birds (at the intersection of medicine and zoology), and owner and manager of a travel clinic in Oslo (*Reiseklinikken*).

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Tick-borne diseases are on the rise.

The article *A man in his sixties from Southern Norway with intermittent fever* gives an account of a severe illness caused by a previously overlooked tick-borne pathogen, *Candidatus Neoehrlichia mikurensis* (1). The microbe was described in 2004 by Kawashara et al. (2), but was later shown to be identical to an *Ehrlichia*-like organism detected in Norwegian ticks by Jenkins et al. in 2001 (3). To the best of our knowledge, this is the first clinical case to be associated with this microbe in Norway.

Zoonoses – diseases and infections that are naturally transmitted between vertebrate animals and humans – are a continuously evolving problem. Over the period 1940–2004, 335 emerging infectious disease events were recorded, i.e. infections that had not previously been described in humans. About 60 % of these cases were zoonoses (4). Socioeconomic, environmental and ecological factors are thought to be driving the emergence of such events (4). Many of the new zoonoses were a result of the AIDS epidemic, when a number of zoonotic pathogens that had not previously been a threat to humans suddenly became pathogenic for HIV-infected individuals with immunodeficiency. It is possible that modern immunosuppressive therapies may ultimately be added to the list of factors that can give rise to new zoonoses.

In an increasingly globalised world, organisms carrying infectious diseases can spread easily over long distances. People travel more than before, as a result of rising living standards and lower airfares. Low-cost transport means that

foodstuffs are transported across national borders to a greater extent than previously. Pathogens and disease vectors may be carried as stowaways on transport or with cargo, for example on live plants.

Ticks are effective disease vectors for a large number of different microbes. Norwegian clinicians will be familiar with tick-borne encephalitis virus (TBEV) and *Borrelia burgdorferi* sensu lato. *B. miyamotoi* is closely related to the *Borrelia* species that cause the dangerous disease relapsing fever, but it produces a much milder illness, with fever and malaise (5). The apparently ubiquitous *Anaplasma phagocytophilum* causes tick-borne fever in sheep (6) and can give rise to a non-specific febrile condition that often goes undiagnosed in humans, but which may lead to a severe disease course with immunodeficiency (7). *Babesia divergens* infection can be fatal in cattle, but is harmless in humans except for those who have been splenectomised (8). *Franciscella tularensis* can be transmitted by ticks (9) and can cause a serious infection, even in those with healthy immune systems. *Bartonella henselae*, which causes cat scratch disease, has been detected in ticks (10). *Rickettsia helvetica* belongs to the 'spotted fever' group and has been found in a number of European countries. It usually causes a self-limiting disease, but serious complications, such as perimyocarditis (11) and meningitis (12) have been described. Potential tick-borne pathogens can be transported across the Skagerrak via ticks on migratory birds. A few years ago, my colleagues and I found three species that were new to Norway – a *Babesia* species, *B. venatorum* (13), a *Borrelia* species, *B. turdi* (14) and a species of tick, *Dermacentor* sp., which is the host for *Babesia canis* – on northward-migrating birds (15).

The doctors at the hospital in Arendal, who thought to check for something truly out of the ordinary (1), deserve applause. So too does the laboratory at the Hospital of Southern Norway, which has established diagnostic testing for these diseases. It is important that doctors throughout the country are aware that they exist and that diagnostics are available.

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