

Neoehrlichiosis successfully treated in patients without immunodeficiency for the first time

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The intercellular bacteria "Candidatus Neoehrlichia," as e.g. Borrelia, can be transferred by ticks. Approx. 4.2 % of indigenous ticks are infected with this rarely explored bacterium which, until today, has been exclusively identified as pathogenic bacterium in patients with an impairment of the immune system, such as in case of leukaemia, rheumatism or after organ transplantation. Now, an interdisciplinary team of researchers of MedUni Vienna and/or AKH Vienna succeeded

in diagnosing the bacterium in an otherwise healthy female patient with fever of an unknown origin - and treating it successfully.

The fact that now also a case of infection in an otherwise healthy patient has been described, lends an entirely new character to the [bacterium](#) and the symptoms of human Neoehrlichiosis, as it is obvious that any person, regardless of a specific disposition, can become infected," says Heimo Lagler of the University Clinic for Internal Medicine I (clinical division for infections and tropical medicine). Furthermore, the Clinical Division for Microbiology, the University for Clinical Pharmacology and the Clinical Institute for Pathology of MedUni Vienna/AKH Vienna were involved.

The non-cultivable, intracellular bacterium was discovered with the aid of a bacteria-specific broad-spectrum polymerase chain reaction (PCR) after the patient had suffered under bouts of fever, joint pain and fatigue for weeks and came to the hospital for the clarification of a "fever of unknown origin". This bacteria-specific PCR is a laboratory method for the verification of any bacterial gene information and is applied in case of suspected bacterial infection in case of negative conventional microbiological methods of detection. MedUni Vienna possesses one of the few laboratories in Austria where these labour as well as cost intensive method is available. "Thereby we were ultimately able to verify Neoehrlichiosis-specific DNA in the patient's plasma," so Lagler.

Excellent therapeutic and diagnostic methodology

As there is no recognised recommendation for the duration of the therapy to date, the [antimicrobial treatment](#) was checked by way of regular PCR measurements. Following one week of high-dosage therapy with the active agent Doxycycline, no DNA signal was discernible and the patient was discharged without symptoms. This diagnostic and therapeutic strategy was now published in *Emerging Infectious Diseases*,

the top journal of the US Health Authority (CDC, Centers for Disease Control and Prevention) (wwwnc.cdc.gov/eid/article/22/2/14-1762_article).

Doxycycline has been utilised in the treatment of Borreliosis for some time, however also for the therapy of other infections, particularly those caused by intercellular pathogens.

Clarification of joint transmission of Borreliosis and Neoehrlichiosis

It is not known whether the young woman became infected during a previous trip to Africa or in Austria, nor whether the bacterium can cause chronic progressions of the disease without antimicrobial treatment or how many people are annually infected in Austria, a high-risk country for tick bites, and how many of those are indeed taken ill. "In view of the available data pertaining to the infection rate of ticks in Austria, a high estimated number of unknown cases of infections is quite realistic," says Lagler. For this reason it is important to have an infection with the bacterium "Candidatus Neoehrlichia" clarified after a tick bite. Also a joint transmission with Borrelia, the initiators of Lyme Borreliosis, is principally conceivable.

Lagler: "Indigenous ticks can be simultaneously infected with both types of bacteria and thus transmit both diseases with just one bite. This would be important from a therapeutic perspective, as the antimicrobial treatment of Borreliosis at an early stage with a Beta-Lactam antibiotic against Neoehrlichiosis would be effective in all probability."

Still more intensive interdisciplinary research at MedUni Vienna and/or the AKH Vienna in all aspects of Neoehrlichiosis are intended to contribute to obtaining yet more robust data regarding frequency, diagnostic and therapy.

More information: Michael Schwameis et al. Specific PCR for Diagnosis and Therapeutic Guidance for Symptomatic Neoehrlichiosis in Immunocompetent Host , *Emerging Infectious Diseases* (2016). [DOI: 10.3201/eid2202.141762](https://doi.org/10.3201/eid2202.141762)

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