

## **Spotted fever group rickettsiae (SFG) in *Borrelia burgdorferi* s.l. seropositive patients with or without Lyme disease in Switzerland**

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### Background:

*R. helvetica* is one of the most frequently detected tick-borne microorganisms in *I. ricinus* ticks in Switzerland, but corresponding infections in humans and associated diseases are rarely reported. Here, we studied the seroprevalence of SFG rickettsiae and their possible clinical manifestations in *B. burgdorferi* seropositive patients.

### Methods:

Serum samples of 100 patients with Lyme disease and seropositive for *Borrelia burgdorferi*, 21 patients seropositive for *Borrelia burgdorferi*, but without clinical signs of Lyme disease and 43 negative controls were analysed for the presence of IgM and IgG antibodies against SFG rickettsiae using an indirect fluorescent antibody test.

### Results:

Totally, 65 out of 121 patients were found to be seropositive for SFG rickettsiae (53.7%). IgM antibodies were detected more frequently in early stages of Lyme disease ( $p=0.01$ ), while patients in late stages showed significantly higher IgG antibody-titers ( $p<0.01$ ). Higher prevalence of IgG-antibodies was observed in patients with headache, fatigue and myalgia compared to the subjects without clinical illness ( $p<0.05$ ). Erythema migrans patients presented with headache, myalgia, and fatigue after therapy with penicillin showed higher SFG seroprevalence ( $p<0.05$ ).

### Conclusion:

This retrospective serological study showed high seroprevalence of SFG rickettsiae in patients seropositive for *B. burgdorferi*. Significantly higher prevalence of IgM antibodies to SFG rickettsiae was observed in erythema migrans patients and higher titers of IgG antibodies were noted in late stages of Lyme disease. Clinical symptoms such as headache, fatigue and myalgia can appear after infection with *Rickettsia* spp. Therefore, screening for these pathogens and appropriate treatment is important.