

Emergence of *Rickettsia slovaca* infection in Brittany, France

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Lyme borreliosis and Mediterranean spotted fever are the most prevalent tick-borne diseases in France [1]. Spotted fever rickettsioses such as that caused by *Rickettsia slovaca* are mainly acquired in southern and eastern Europe. A 50-year-old woman spent an afternoon walking in a wooded area in 'Belle-Ile', an island off Brittany. She found a tick in her hair, which she removed and kept. Five days later, she presented with fever and asthenia, enlarged and painful cervical lymph nodes, and a maculopapular rash. She was then admitted to our department in Paris. She complained of a severe headache, and was found to have a necrotic eschar on the occiput, surrounded by a reddish halo and a maculopapular rash throughout the body. Serology testing for *Rickettsia conorii* and *R. slovaca* as assessed by microimmunofluorescence was positive, but antibody levels were low (titre 1 : 64). Owing to a cross-reaction with other rickettsial species, the western blot analysis was inconclusive. The tick was identified as *Dermacentor marginatus*. DNA amplification by PCR of a partial sequence of *rOmpA* from the tick allowed confirmation of the diagnosis and identification of *R. slovaca* (100% homology, Genbank accession number U43808). The patient received doxycycline for 14 days, and recovered within a few days. Asthenia persisted for up to 1 month, and a localized alopecia remains at the site of the tick bite.

DISCUSSION

In recent years, six additional species or subspecies within the spotted fever group of the genus *Rickettsia* have been described as emerging pathogens in this part of the world. These tick-borne

microorganisms include *R. conorii* subsp. *israelensis*, *R. conorii* subsp. *caspia*, *Rickettsia aeschlimanni*, *R. slovaca*, *Rickettsia sibirica* subsp. *mongolitimonae* and *Rickettsia massiliae* [1]. *R. slovaca* was first isolated in 1968 in a *D. marginatus* tick collected in Slovakia. The first proven case of human *R. slovaca* infection was reported in France in 1997 [2] in a woman visiting the Pyrenees mountains, and DNA amplification by PCR on a skin biopsy specimen enabled the diagnosis. In Hungary, this illness is named TIBOLA (tick-borne lymphadenopathy), and in Spain it is called DEBONEL (*Dermacentor*-borne necrosis-erythema-lymphadenopathy). The occurrence of *R. slovaca* infections among patients living in France and Hungary who presented with a single inoculation lesion of the scalp and enlarged cervical lymph nodes after receiving a bite from a *Dermacentor* tick has been evaluated [3]. Among the 67 cases collected, only 17 patients (25%), nine of whom were from France and eight of whom were from Hungary, had definitive evidence of *R. slovaca* infection [3]. The incubation time of the disease ranged from 1 to 55 days. Females were more frequently affected than males, as strong and long hair is a predisposing factor. Also, the questing height on vegetation of *Dermacentor* ticks (i.e. 1–1.5 m) explains why children are more frequently bitten. Both single and multiple enlarged lymph nodes were seen, and they were painful in ten cases (59%). Only two patients had fever. Maculopapular rash was observed in one patient. At follow-up, three patients still had alopecia 1 year after the acute episode occurred [3]. In previous studies, fever and rash were also significantly less common in patients with TIBOLA than in patients with Mediterranean spotted fever [3]. The main host is the wild boar, and the implicated vector is *Dematocentor marginatus* [3], a hard tick (Ixodidae) that is prevalent throughout Europe to Central Asia, and that feeds on a variety of mammals [1]. Tick bites are more common on the scalp. Although *Dermacentor* ticks

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No conflicts of interest declared.

are infected with *R. sibirica* in Siberia and western China and by *Rickettsia rickettsi* in America, *R. slovaca* is the only *Rickettsia* species found in these ticks in Europe [1]. The prevalence of *R. slovaca* in *D. marginatus* ticks ranges from 1% to 17%. TIBOLA seems to be more widely distributed geographically than are other European rickettsioses. At the Centre for Tickborne Diseases in Budapest, data on patients with symptoms consistent with TIBOLA have been collected from Austria, Slovakia, the Czech Republic, Romania, Slovenia, Croatia and Bulgaria [3]. Moreover, this tick-related disorder can be found in Spain, principally in La Rioja, a region of northern Spain that hosts the regional reference centre for zoonoses [1]. In France, *R. conorii* has long been considered to be the only spotted fever group rickettsiosis, but *R. slovaca* may also be prevalent, particularly in the south of France, contributing 25% of the cases in a recent study [4]. The standard microimmunofluorescence serological testing proved insensitive, and Western blot assay is useful to allow identification of the

species [4], whereas DNA amplification by PCR from serum samples appears to be not sensitive enough. In conclusion, whereas *R. slovaca* is a common cause of disease in Hungary, Spain, and France, TIBOLA cases have up to now been restricted to southern regions. To our knowledge, this report is the first description of *R. slovaca* from Brittany, France, suggesting a possible extension to the north of this tick-borne disease.

REFERENCES

1. Brouqui P, Parola P, Fournier PE, Raoult D. Spotted fever rickettsioses in southern and eastern Europe. *FEMS Immunol Med Microbiol* 2007; **49**: 2–12.
2. Raoult D, Berbis P, Roux V, Xu W, Maurin M. A new tick-transmitted disease due to *Rickettsia slovaca*. *Lancet* 1997; **350**: 112–113.
3. Raoult D, Lakos A, Fenollar F, Beytout J, Brouqui P, Fournier PE. Spotless rickettsiosis caused by *Rickettsia slovaca* and associated with *Dermatocentor* ticks. *Clin Infect Dis* 2002; **34**: 1331–1336.
4. Gouriet F, Rolain JM, Raoult D. *Rickettsia slovaca* infection, France. *Emerg Infect Dis* 2006; **12**: 521–523.