

Case Report: A Confirmed Case of *Rickettsia parkeri* Infection in a Traveler from Uruguay

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Abstract. The first confirmed case of *Rickettsia parkeri* infection in Uruguay is reported. To date, in South America, molecularly confirmed cases of human infection have been found in Argentina and probably, Brazil. Our patient returned to Spain after a 7-day trip to Colonia Suiza (Southwestern Uruguay). He presented fever (39°C), chills, and two eschars (tache noire-like) surrounded by an indurated, erythematous halo on the inner side of the left ankle besides a maculopapular rash on the legs. After treatment with doxycycline for 7 days, he fully recovered. *R. parkeri* infection was diagnosed by molecular-based detection of the microorganism in a swab specimen of the eschar. Diagnosis was supported by seroconversion between acute- and convalescent-phase sera specimens.

Until recently, Rocky Mountain spotted fever (RMSF) or *Rickettsia rickettsii* infection was the unique tick-borne rickettsiosis known in the New World. However, during last decades, new *Rickettsia* species have been identified as human tick-borne pathogens, which is the case of *R. parkeri*. Human cases caused by this microorganism and confirmed using molecular assays have been mainly described in North America,^{1–5} and retrospective analyses have shown that some cases of RMSF could be now attributed to *R. parkeri*.⁶ In South America, two molecularly confirmed cases of human infection with *R. parkeri* have been reported in Argentina, and recent molecular results strongly suggest that this infection is also distributed in Brazil.^{7–9} Herein, we report a confirmed case of *R. parkeri* human disease in a patient who returned to Spain after acquiring the infection in Uruguay.

A 54-year-old man returned to Spain on December 16, 2012 after a 7-day trip to Uruguay. He did not notice any arthropod bites. A risk factor for being bitten by ticks is walking in grassy areas, and our patient had been walking barefoot along a grassy area in Colonia Suiza (southwestern Uruguay). Two days after arrival in Spain, he noticed two crusted lesions on the inner side of the left ankle. The next day, he presented with malaise, fever, and chills. He was treated with amoxicillin-clavulanic acid and mupirocin cream for 4 days by a primary care physician, but his symptoms persisted. On December 25, he was admitted to the Hospital San Pedro in La Rioja (Spain) with the presumptive diagnosis of cellulitis after probable arthropod bite. Examination showed fever (39°C) and two eschars (tache noire-like) surrounded by an indurated, erythematous halo on the inner side of the left ankle (Figure 1). A petechial rash was also observed on legs. Rickettsiosis was suspected, and DNA was extracted from ethylenediaminetetraacetic acid disodium salt-treated blood and cutaneous swab specimens from the eschar using the DNeasy Blood & Tissue Kit (QIAGEN, Hilden, Germany) and tested for the presence of *Rickettsia* spp. using polymerase chain reaction (PCR) assays for *gltA* and *ompA* genes (Table 1).^{10,11} In addition, acute and convalescent sera specimens (collected 2 weeks after the onset of the illness) were tested by immunofluorescence assays (IFAs) using *R. conorii* (VIRCELL S.L., Granada, Spain) and *R. rickettsii* (FOCUS Diagnostics, Cypress, CA)

as antigens. Fragments of *gltA* and *ompA* rickettsial genes were amplified from the swab sample. Partial *gltA* (285/285 bp) and *ompA* (535/536 bp) sequences showed 100% and 99.8% identity to the corresponding sequences of *R. parkeri*. Diagnostic antibodies against spotted fever group rickettsiae were not detected in the acute serum specimen, but the convalescent specimen was positive for immunoglobulin G (IgG) at a titer of 4,096 with both antigens. Doxycycline (100 mg/12 hours) was administered for 7 days, and the patient fully recovered (fever disappeared in the first 24 hours after initiation of doxycycline therapy).

Previously considered non-pathogenic in humans, *R. parkeri* was first described in *Amblyomma maculatum* ticks.¹² In 2004, Paddock and others¹ described the first human cases associated with this bacterium in the United States. At the same time, this *Rickettsia* species was also suspected to be the responsible agent for the tick-borne spotted fevers in Uruguay, because it was amplified from one *A. triste* tick attached to a patient who developed a rickettsial syndrome.¹³ Regarding clinical features, it seems that *R. parkeri* causes a spotted fever syndrome that is less severe than RMSF. Also, it can be differentiated from RMSF by the presence of an eschar at the site of the tick attachment.³ In South America, rickettsial illness caused by *R. parkeri* has been described in Uruguay, Argentina, and probably, Brazil.¹⁴ Cases from Argentina have been confirmed



FIGURE 1. Crusted lesions on the inner side of the left ankle.

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TABLE 1
Primers used for amplification of partial rickettsial genes

Primer name	Primer sequence (5' → 3')	Amplified fragment (bp)	Annealing temperature (°C)	Ref.
<i>ompA</i>				
Rr190.70p	ATGGCGAATATTTCTCCAAAA	631	46	10
Rr190.701n	GTTCCGTTAATGGCAGCATCT			
Rr190.70p	ATGGCGAATATTTCTCCAAAA	532	48	10
Rr190.602n	AGTGCAGCATTCGCTCCCCCT			
<i>gltA</i>				
RpCS.877p	GGGGCCTGCTCACGGCGG	381	48	10
RpCS.1,258n	ATTGCAAAAAGTACAGTGAACA			
RpCS.896p	GGCTAATGAAGCAGTGATAA	337	56	11
RpCS.1,233n	GCGACGGTATACCCATAGC			

with molecular tools,⁷ whereas rickettsial taxonomy related to Brazilian cases remains unclear.^{8,9} All confirmed and probable cases referred to tick bites. Most presented an eschar at the tick bite site besides a maculopapular rash that was accompanied by fever, myalgias, or headache. As we observed in our patient, the clinical course was benign in all published cases, with clinical resolution after doxycycline prescription.⁷ Recently, two cases of spotted fever group rickettsiosis caused by a non-cultured *Rickettsia* closely related to *R. parkeri* as well as *R. africae* and *R. sibirica* have been reported in Brazil.^{8,9} To date, whether these taxonomic names may be considered a single species is discussed.¹⁵

R. parkeri is a common microorganism found in ticks from South American countries.^{13,16–19} In Uruguay, *R. parkeri* is present in a relatively high percentage of *A. triste* ticks.²⁰ *A. triste* is present in at least 12 other Latin American countries, and it is probable that this infection is widely distributed in most of the continent.^{21,22} Higher *R. parkeri* infection rates among tick populations, compared with *R. rickettsii*, suggest that *R. parkeri* rickettsiosis is likely to be misdiagnosed.²³ In conclusion, we must consider the possibility of rickettsiosis in people returning from South America.

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