Rickettsia felis Infection Acquired in Europe and Documented by Polymerase Chain Reaction

Joachim Richter,* Pierre-Edouard Fournier,† Jasmina Petridou,* Dieter Häussinger,* and Didier Raoult†

We report the first case of Rickettsia felis infection in Europe to be documented by polymerase chain reaction (PCR) and serologic testing.

R. felis (1) was first detected in 1990 as the ELB agent from the midgut epithelial cells of cat fleas (Ctenocephalides felis) (2). The pathogenic role of R. felis for humans has been demonstrated by its detection by PCR in five patients from Texas, Mexico, and Brazil (3-5). Following isolation of the bacterium and the first establishment of a strain in 2000, a new serologic test allowed the identification of three additional human cases (5).

Case Reports

In August 2000, a 42-year-old woman and her 42-year-old husband were hospitalized in Düsseldorf, Germany, with high fever and rash of 4 and 2 days' duration, respectively. The fever was associated with marked fatigue and headache. Four to 5 days before the onset of fever, both patients had noted a single black, crusted, cutaneous lesion surrounded by a livid halo (on the woman’s right thigh and the man’s abdomen). On admission, both patients had fever of 39°C and generalized maculopapular rash. The man had enlarged, painful lymph nodes in the inguinal region. Clinical examination was otherwise normal.

Laboratory investigation showed slightly elevated liver enzymes. The woman’s values were aspartate amino transferase (ASAT) 48 IU/L (normal <26); alanine amino transferase (ALAT) 29 IU/L (normal <27); gamma glutamyl transferase (g-GT) 32 IU/L (normal <200); and lactate dehydrogenase (LDH) 517 IU/L (normal <250). The man’s values were ASAT 38 IU/L, ALAT 32 IU/L, g-GT 79 IU/L, and LDH 498 IU/L. Other notable findings were elevated C reactive pro-

*Universitätskliniken, Heinrich-Heine-Universität, Düsseldorf, Germany; and †Centre National de la Recherche Scientifique, Faculté de Médecine, Marseille, France
DISPATCHES

and lanes 3, 5, 7, and 9: DNA diluted 1:10 in deionized water. From dog #2; lane #10: negative control; lanes 2, 4, 6, and 8: pure DNA; from woman; lanes 6 and 7: serum from dog #1; lanes 8 and 9: serum many); lanes 2 and 3: serum #1 from man; lanes 4 and 5: serum #1

Lane 1: standard DNA size marker V (Boehringer, Mannheim, Germany) performed on the serum specimens from both patients and their dogs. Figure. Results of the nested polymerase chain reaction (PCR) assay

100% homology with Conclusions

Because our patients were in contact with dog ticks, a tick-borne rickettsiosis was suspected. However, no endemic tick-borne rickettsiosis has been identified in Germany to date. The most frequent rickettsiosis in Europe, Mediterranean spotted fever due to R. conorii, is contracted in the Mediterranean area; clustered cases, as observed for our patients, are exceptional. In contrast, African tick-bite fever, a rickettsiosis due to R. africae, is frequently encountered in travelers to southern Africa (7). Murine typhus, caused by R. typhi, which has long been considered the only flea-transmitted rickettsiosis, has not been reported in Germany but is present in southern Europe, including Spain, Portugal, Cyprus, and Greece (9-12). Until 1997, R. felis had only been detected in the United States. Since then, it has been detected by PCR in humans in Mexico (4) and Brazil (5) and in cat fleas from Ethiopia (5) and Spain (Marquez PJ, pers. comm.), thus demonstrating its presence in various areas, including the Old World, and supporting our preliminary serologic findings in French patients (5). In this study, serologic techniques discriminated among several rickettsiae for the woman but not her husband. Neither patient had antibodies to R. typhi, which suggests that antibodies to R. felis should be evaluated systematically in patients with typhuslike illnesses. Although no direct or indirect evidence of R. felis infection was obtained for the man, the simultaneous occurrence of symptoms similar to those observed in his wife strongly suggests infection with the same microorganism. Contact with fleas carried by their dogs would account for the simultaneous infection, as R. felis has been identified in C. felis fleas collected from a dog (13). However, neither fleas nor ticks from of the two dogs were available at the time of examination.

Our report describes the first PCR-confirmed case of human R. felis infection in Europe and supports the concept that R. felis may be widely distributed in the Old World and should be considered in the diagnosis of typhuslike illnesses, especially following a flea bite. Further studies should be conducted to identify the vectors of this rickettsia in Europe.

Acknowledgments

The authors thank the patients for their cooperation and dog owners Kerstin Gerhards, Dion Jongmans, and Hans Arenhoevel for providing the blood samples from the contact dogs.

Dr. Richter is Consultant for Tropical Medicine in the University Clinics of Düsseldorf. His main scientific interests are schistosomiasis and trematode diseases, as well as emerging infectious diseases.

References


Address for correspondence: Joachim Richter, Klinik für Gastroenterologie, Hepatologie und Infektionstologie, Tropenmedizinische Ambulanz, Universitätsklinik Heinrich-Heine-Universität, Moorenstr. 5, D-40225 Düsseldorf, Germany; fax: 49 211 31 90 639; e-mail: Joachim.Richter@med.uni-duesseldorf.de

208 Emerging Infectious Diseases • Vol. 8, No. 2, February 2002