

Rickettsia mongolotimonae Infection in South Africa

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We report the first laboratory-confirmed case of *Rickettsia mongolotimonae* infection in Africa. The patient sought treatment for an eschar on his toe; lymphangitis, severe headaches, and fever subsequently developed. After a regimen of doxycycline, symptoms rapidly resolved. *R. mongolotimonae* infection was diagnosed retrospectively by serologic tests and molecular-based detection of the organism in biopsy specimens of eschar material.

Rickettsioses are infections of emerging medical importance, particularly in southern Africa, where an increasing number of cases are being encountered among both residents and tourists (1). Three *Rickettsia* species have been associated with human disease in South Africa to date. *Rickettsia conorii* has long been recognized as the agent of Mediterranean spotted fever, and more recently, a newly recognized species, *R. africae*, has been identified as the agent of African tick-bite fever. In 2002, the first case report of a patient infected with *R. aeschlimannii* was published (2). In addition to these recognized pathogens, *Rickettsia* species, including *R. mongolotimonae*, have been detected in human-biting arthropods in Africa. This species (3) was first encountered in *Hyalomma asiaticum* ticks in Inner Mongolia in 1991 (4) but has subsequently been associated with human infections in southern France (5) and, perhaps of most relevance to this report, has been detected in *H. truncatum* ticks collected from cattle in Niger (6). This species of tick, which at least during its immature life stages parasitizes migratory birds, is widely distributed in many African countries, including South Africa (7).

The Study

In September 2002, a 34-year-old (HIV-seronegative) construction worker, working near Ellisras in South Africa's Northern Province, discovered a lesion on the inside of the second toe on his right foot (Figure); subsequently, severe headaches and high fever developed. He was examined at a local hospital and found to have lymphangitis extending pretibially from the lesion; as a result

of his other symptoms, he was treated for blood poisoning with ceftriaxone sodium, 1,000 mg once daily. During the next 3 days, the lesion at the bite site (noted by the examining physician) remained very sore, and the patient's right inguinal lymph node became enlarged and very painful. The patient then decided to return to his hometown and sought treatment from his general practitioner (on day 5 after discovery of the lesion). On examination, the lesion and lymphangitis were clearly visible on the patient's toe, although cellulitis and edema were not observed. His inguinal lymph node had swollen to 3 cm in diameter, and he was still febrile (38.5°C). Blood samples were then obtained as well as a biopsy specimen from the lesion. A regimen of doxycycline, 100 mg per day orally, for 5 days was prescribed and 1 day's dosage was administered. The next day, the patient was afebrile, and the lymphangitis had completely resolved.

In the laboratory, a Giemsa stain of a smear prepared from the patient's blood showed activated lymphocytes. A complete blood count showed thrombocytosis ($632 \times 10^3/\mu\text{L}$), but all other hematologic parameters were within the normal range. Biochemical findings showed elevated levels of alanine transaminase (66 IU/L), blood urea nitrogen (7.2 g/L), and triglycerides (2.2 mmol/L); and decreased levels of chloride (96.3 mmol/L) and albumin (38g/L); all other tests yielded results within the normal range. Testing of the patient's serum with the Weil-Felix test demonstrated an antibody titer (80) only against the OX2 *Proteus* antigen, giving presumptive evidence of a rickettsial infection. As a result, antirickettsial immunofluorescence testing was performed (8). The serum did not yield significant immunoglobulin (Ig) M titers against *R. conorii* or *R. africae* antigens, but IgG titers of



Figure. Eschar with lymphangitis.

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64 were found by using both antigens. DNA was extracted from the eschar biopsy specimen by using the QIAamp Tissue kit (QIAGEN GmbH, Hilden, Germany) according to the manufacturer's instructions. This DNA extract was used as template in a previously described polymerase chain reaction assay targeting a *Rickettsia* spp. *rOmpA* fragment (9). An amplification product was obtained from this extract but not from any concurrently processed control materials. The amplification product was purified; the nucleic acid sequences of both strands were then determined. The sequence obtained from these efforts was found to share >99% similarity with the corresponding *rOmpA* fragment of *R. mongolotimonae*.

Conclusions

The combination of clinical and laboratory data yielded strong evidence that the case described here was an infection of *R. mongolotimonae*, the first reported in southern Africa. A single eschar is also typical of *R. conorii* infections, but these are characterized by rash (Mediterranean spotted fever), which the current patient did not have. Although *R. africae* infections manifest only rarely as a rash, they are typified by multiple eschars (10). This case description is also very similar to that relating to a French patient infected with *R. mongolotimonae*, who had lymphangitis and inguinal lymphadenopathy. The serologic findings indicate exposure to a spotted fever group rickettsia rather than to a specific species within this group, but the near identity of the *rOmpA* sequence obtained from the patient's eschar to that of *R. mongolotimonae* provides a clear indication that this species, rather than other spotted fever group rickettsiae, was present at the site of the tick bite. Although no tick was found in association with the patient's eschar, his infection may have been acquired from a *H. truncatum*, as this species is abundant in the region of the bushveld where the patient had been working and is known to feed on humans (11).

Dr. Pretorius is a principal specialist medical scientist and lecturer at the National Health Laboratory Services, Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa. Her research interests include the clinical and epidemiologic features of vector-borne diseases, especially those caused by rickettsiae, ehrlichiae, and bartonellae.

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Dispatches

Articles should be 1,000-1,500 words and need not be divided into sections. If subheadings are used, they should be general, e.g., "The Study" and "Conclusions." Provide a brief abstract (50 words); references (not to exceed 15); figures or illustrations (not to exceed two); and a brief biographical sketch of first author—both authors if only two. Dispatches are updates on infectious disease trends and research. The articles include descriptions of new methods for detecting, characterizing, or subtyping new or reemerging pathogens. Developments in antimicrobial drugs, vaccines, or infectious disease prevention or elimination programs are appropriate. Case reports are also welcome.