

County Health Department for further testing and speciation. It was first tested with a fluorescein-conjugated antibody for *Neisseria gonorrhoeae*; results were negative. A RapID NH panel (Remel, Lenexa, KS, USA) was performed that identified the isolate as *M. osloensis* with a 99.7% probability. Ideally, the isolate would have undergone more comprehensive genotypic and phenotypic characterization. However, as a presumed *Neisseria* species, it was subjected to the usual testing protocol at the health department. Chlamydial culture was performed by using buffalo green monkey kidney cells (Viomed, Minnetonka, MN, USA) grown under standard conditions. No viral inclusions were seen, and the culture did not react with chlamydial antibodies (Trinity Biotech, Bray, Ireland). Because the child responded rapidly to antimicrobial drug treatment, no further workup of the bacterial isolate was considered. The child was healthy 3 days later and was discharged to his home with topical erythromycin and instructions to his parents to follow up with his primary care physician.

Neonatal ophthalmia is a potentially serious, sight-threatening infection that may be caused by sexually transmitted pathogens. Accordingly, this clinical presentation warrants prompt diagnosis and appropriate therapy. At the same time, suspicion of a sexually transmitted disease causes immense social turmoil. Specific bacterial cultures are essential for precise microbiologic diagnosis and treatment.

Cultures of conjunctival specimens from our patient grew *M. osloensis*. Clinically, this patient's infection was indistinguishable from other causes of neonatal ophthalmia. The differential diagnosis includes other agents such as *N. gonorrhoeae*, *Chlamydia trachomatis*, *M. catarrhalis*, *Staphylococcus aureus*, *Haemophilus influenzae*, and *Streptococcus pneumoniae*. Rarely, gram-negative

enteric organisms may be implicated (9). Viruses, such as adenovirus or herpesvirus, are also a potential cause but were unlikely in this case.

Finally, social issues must be considered. When an infant is seen with neonatal ophthalmia, a physician will often presume it to be gonococcal or chlamydial and assume the mother is positive for these infections. Recognizing that *Moraxella* species, including *M. osloensis*, may produce an identical clinical picture should limit presumptions regarding sexually transmitted diseases until a precise microbiologic diagnosis is made.

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References

- Murphy TF. *Moraxella* (*Branhamella*) *catarrhalis* and other gram-negative cocci. In: Mandell GL, Bennett JE, Dolin R, editors. *Mandell, Douglas, and Bennett's principles and practice of infectious diseases*. 5th ed. Philadelphia: Churchill Livingstone; 2000. p. 2259–66.
- Han XY, Tarrand JJ. *Moraxella osloensis* blood and catheter infections during anti-cancer chemotherapy: clinical and microbiologic studies of 10 cases. *Am J Clin Pathol*. 2004;121:581–7.
- Berrocal AM, Scott IU, Miller D, Flynn HW. Endophthalmitis caused by *Moraxella osloensis*. *Graefes Arch Clin Exp Ophthalmol*. 2002;240:329–30.
- Shah SS, Ruth A, Coffin SE. Infection due to *Moraxella osloensis*: case report and review of the literature. *Clin Infect Dis*. 2000;30:179–81.
- Vuori-Holopainen E, Salo E, Saxen J, Vaara M, Tarkka E, Peltola H. Clinical "pneumococcal pneumonia" due to *Moraxella osloensis*: case report and a review. *Scand J Infect Dis*. 2001;33:625–7.
- Hernan-Rodriguez C, Valiani L, Ballester D, Morales M, Patallo C, Pinto M, et al. Pneumonia and empyema caused by *Moraxella osloensis* [article in Spanish]. *Enferm Infecc Microbiol Clin*. 2000;18:52.
- Paul AC, Varkki S, Mathews MS, Moses PD. Pseudo-gonococcal ophthalmia neonatorum. *Indian Pediatr*. 2000;37:1368–70.
- Qureshi BH. Pseudo gonococcal conjunctivitis. *Indian J Pathol Microbiol*. 1998;41:380.
- Weiss AH. Conjunctivitis in the neonatal period (ophthalmia neonatorum). In: Long SS, Pickering LK, Prober CG, editors. *Principles and practice of pediatric infectious diseases*. 2nd ed. New York: Churchill Livingstone; 2003:486–90.

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African Tick-bite Fever in French Travelers

To the Editor: African tick-bite fever (ATBF) is caused by *Rickettsia africae* and remains the most common tickborne rickettsiosis in sub-Saharan Africa (1,2). We describe an outbreak of ATBF in 10 of 34 French tourists on their return from South Africa in March 2005. Fever, skin rash, and multiple eschars on the legs developed in the index case-patient (patient 9, Table). After informed consent was obtained, the tourists completed a questionnaire for epidemiologic and clinical data. Acute- and convalescent-phase serum samples were collected when possible for serologic analysis performed at the Unité des Rickettsies. The samples were tested against a panel of antigens including *R. typhi*, *Francisella tularensis*, *Coxiella burnetii*, *Borrelia burgdorferi*, *Anaplasma phagocytophylum*, *R. felis*, *R. helvetica*, *R. conorii* subsp. *conorii* strain Malish, *R. africae*, *R. sibirica mongolotimonae*, *R. massiliae*, and *R. slovaca*, as previously described (3). A case of symptomatic confirmed ATBF was defined as clinical illness and positive serologic results against *R. africae*, whereas a case of probable ATBF was defined as typical clinical symptoms without

definite serologic evidence of *R. africana* infection.

Of the 34 travelers, 30 completed the questionnaire and 20 consented to give at least 1 serum sample. After their return to France, symptoms compatible clinically with ATBF developed in 10 of the travelers (Table) and 9 had positive serologic results and/or a seroconversion for spotted fever group rickettsia, including *R. africana* (Table). The median time from illness onset to serum testing was 19 days. Thus, 9 of the travelers had probable and 1 had possible (no serum was available) ATBF. Including both probable and possible cases, the illness rate for the whole group was 33.3% (10/30). None of the travelers reported a history of tick bite. The delay between probable exposure and onset of symptoms was 3–10 days (mean \pm standard deviation 6.1 ± 1.9 days). Multiple eschars on the legs or arms were seen in 7 (70%) of 10 patients. Eight patients received doxycycline (200 mg per day) for a mean of 10.8 ± 5.9 days (range 5–20), 1 patient received pristinamycin for 8 days, and 1 patient received no treatment. All patients recovered fully without sequela; however, 6 patients reported convalescent-phase asthenia and 1 reported chronic insomnia, which had

not occurred previously, for 2 months after the illness. Among the 10 remaining travelers, for whom a serum sample was available, with no clinical evidence of ATBF, 5 were positive for *R. africana* with only immunoglobulin M (IgM) at a titer of 1:32 in 4 cases and IgG at 1:128 with IgM at 1:32 in 1 case (an acute-phase serum from this patient showed IgG at 1:32 and IgM at 1:32). The 5 other travelers had negative serologic results. Results of serologic testing for other bacteria were negative for all travelers. Twenty-four travelers (80%), including the 10 symptomatic patients, reported using topical insect repellent daily.

Most cases of ATBF are reported in clusters of travelers exposed to ticks during game hunting or safaris, as described here (1,3–5). The estimated incidence of African tick-bite fever in safari travelers is 4%–5.3% (4) but higher incidence may be reported as emphasized in our study. In our study, epidemiologic and clinical data for the 10 symptomatic patients were obtained in accordance with current knowledge of ATBF (2).

Skin biopsy samples remain the best tool to isolate or detect *R. africana* (2,6). However, specific serologic tests, especially immunofluorescence

assays, remain the most widely used microbiologic test worldwide (7). No commercially available test for ATBF exists but due to extensive cross-reactions between spotted fever group rickettsiosis, commercial kits based on the detection of *R. conorii* antibodies can be used for the diagnosis of ATBF. Most tourists reported using topical insect repellents without any efficacy. Applying repellents to exposed skin provides little protection against ticks because they can crawl underneath clothing and bite untreated portions of the body (8). Thus, treating clothing with synthetic pyrethroid insecticide is recommended to complement the topical repellent (8).

In conclusion, our study emphasizes the importance of ATBF as a common cause of flulike illness in travelers returning from South Africa, but with a higher rate than malaria, typhoid fever, or other tropical fevers. The most important clinical clues are the presence of clustered cases with multiple inoculation eschars. Healthcare professionals who are providing advice should inform persons traveling to endemic areas of Africa of the risk of contracting ATBF and the importance of protecting themselves against tick bites. Chemoprophylaxis with doxycycline is not recommended,

Table. Epidemiologic, clinical, and serologic information for 10 patients with African tick-bite fever*

Patient	Sex/age (y)	Tick bite	Delay before onset (d)	Fever	Headache	Myalgia	Eschar (site)	Skin rash	1st serum† IgG/IgM	2nd serum† IgG/IgM	Diagnosis
1	M/62	No	7	Yes	No	No	Multiple (legs)	No	NA	NA	Probable
2	F/58	No	6	Yes	No	Yes	Multiple (legs, arms)	No	64/32	64/128	Confirmed
3	M/58	No	6	No	Yes	No	Single (trunk)	No	64/32	128/16	Confirmed
4	F/51	No	6	No	Yes	Yes	Multiple (legs, trunk)	No	0/64	128/16	Confirmed
5	M/58	No	5	Yes	No	Yes	Multiple (legs)	No	512/0	512/0	Confirmed
6	F/57	No	5	No	No	Yes	Yes (unknown)	Yes	NA	32/16	Confirmed
7	M/65	No	5	Yes	Yes	Yes	Multiple (hands)	No	128/64	512/128	Confirmed
8	F/59	No	10	No	No	No	Multiple (legs, arms, trunk)	No	64/8	128/32	Confirmed
9	M/53	No	3	Yes	Yes	Yes	Multiple (legs)	Yes	0/0	1,024/512	Confirmed
10	M/51	No	8	Yes	No	Yes	No	Yes	32/32	64/64	Confirmed
Total (%)		0		60	40	70	90	30			

*NA, not available; Ig, immunoglobulin; male-to-female ratio, 60%; mean age = 57.2 ± 4.5 years.

†Identical results obtained with both *Rickettsia africana* and *R. conorii* antigens.

however, this recommendation may be evaluated in future clinical trials.

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References

1. Raoult D, Fournier PE, Fenollar F, Jensenius M, Prioe T, de Pina JJ et al. *Rickettsia africae*, a tick-borne pathogen in travelers to sub-Saharan Africa. *N Engl J Med*. 2001;344:1504–10.
2. Jensenius M, Fournier PE, Kelly P, Myrvang B, Raoult D. African tick bite fever. *Lancet Infect Dis*. 2003;3:557–64.
3. Fournier PE, Roux V, Caumes E, Donzel M, Raoult D. Outbreak of *Rickettsia africae* infections in participants of an adventure race from South Africa. *Clin Infect Dis*. 1998;27:316–23.
4. Jensenius M, Fournier PE, Vene S, Hoel T, Hasle G, Henriksen AZ et al. African tick bite fever in travelers to rural sub-Equatorial Africa. *Clin Infect Dis*. 2003;36:1411–7.
5. McQuiston JH, Paddock CD, Singleton J Jr., Wheeling JT, Zaki SR, Childs JE. Imported spotted fever rickettsioses in United States travelers returning from Africa: a summary of cases confirmed by laboratory testing at the Centers for Disease Control and Prevention, 1999–2002. *Am J Trop Med Hyg*. 2004;70:98–101.
6. Pretorius AM, Birtles RJ. *Rickettsia mongolotimonae* infection in South Africa. *Emerg Infect Dis*. 2004;10:125–6.
7. La Scola B, Raoult D. Laboratory diagnosis of rickettsioses: current approaches to the diagnosis of old and new rickettsial diseases. *J Clin Microbiol*. 1997;35:2715–27.
8. Parola P, Raoult D. Tick-borne bacterial diseases emerging in Europe. *Clin Microbiol Infect*. 2001;7:80–3.

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