

Lower Extremity Rash Presenting After a Trip to South Africa

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Figure 1.



Figure 2.

A 69-year-old man presented with unsteadiness, fever, chills, and a rash on his right lower extremity. He had recently returned from a trip to South Africa. He developed nausea and vomiting secondary to his disequilibrium, as well as blurry vision. After treatment with cephalexin (Keflex), ceftriaxone, and cefpodoxime, there was no improvement in the rash or associated symptoms. He did not develop leukocytosis. The patient was an arborist and

had close contact with trees and other vegetation. While he was in South Africa, he went on safaris outside of urban areas.

On physical examination, the patient had a horizontal nystagmus with lateral gaze bilaterally. There were two aphthous ulcers on the buccal mucosa. There was a scattered, blanching maculopapular rash on his anterior and posterior trunk and his extremities. There was also a deeply erythematous, macular, confluent non-blanching rash on the right lower extremity that was circumferential (*Figure 1*). The rash was warm and tender to palpation. A satellite lesion appeared as a pustular eschar with a surrounding rim of erythema (*Figure 2*), superior to the right lateral malleolus.

Question

Based on the patient's history and physical examination findings, which one of the following is the most likely diagnosis?

- A. African tick-bite fever.
- B. Cellulitis with superimposed drug exanthem.
- C. Lyme disease.
- D. Rocky Mountain spotted fever.
- E. Thrombotic thrombocytopenic purpura.

See page 1024 for discussion.

Summary Table

Condition	Cause	Characteristics
African tick-bite fever	<i>Rickettsia africae</i>	Triad of inoculation eschar, maculopapular rash, and intermittent fevers; may have myalgia, headaches, regional lymphadenitis, and aphthous stomatitis
Cellulitis with superimposed drug exanthem	Bacterial infection	Swelling, erythema, and warmth at the site of the rash; drug exanthems cause diffuse, erythematous macules that spare the hands and feet
Lyme disease	<i>Borrelia burgdorferi</i>	Characteristic erythema migrans; fever, myalgia, headaches
Rocky Mountain spotted fever	<i>Rickettsia rickettsii</i>	Blanching, erythematous macules on ankles and wrists that become maculopapular and spread centrally to the trunk; headache, myalgia, confusion, abdominal pain
Thrombotic thrombocytopenic purpura	Clot formation in small vessels	Pentad of microangiopathic hemolytic anemia, thrombocytopenia that leads to purpura, neurologic symptoms, fever, and renal failure

Discussion

The answer is A: African tick-bite fever. This can be a common diagnosis affecting those who travel to sub-Saharan Africa.¹ It is caused by a *Rickettsia africae* infection transmitted by an *Amblyomma* tick bite. The ticks live on vegetation and hooved animals that are common on safaris and in the wild.² The incidence of African tick-bite fever has been estimated at 4% to 5.3% in travelers to sub-Saharan Africa, and is most common in group travelers such as humanitarian workers, tourists on safari, and game hunters.³

Diagnosis is usually clinical, with the triad of an inoculation eschar, maculopapular rash, and intermittent fevers in a traveler to tick-endemic regions. Leukocyte counts are usually within normal limits. Other associated findings vary but may include myalgias, headaches, and in some cases, regional lymphadenitis.⁴ An uncommon but specific finding for African tick-bite fever is aphthous stomatitis, which this patient had.²

The satellite lesion is where the tick bite most likely occurred. Initially, it had the characteristic black eschar with a surrounding rim of erythema, but the area had become pustular by the time the picture was taken. The eschar can become a nidus for secondary infection.⁵ Punch biopsy can confirm the diagnosis using a polymerase chain reaction analysis of the inoculation eschar. Results may be negative after antibiotic treatment has been initiated. Doxycycline is typically effective.¹

This patient was originally treated for cellulitis because of the warm, red rash with swelling.⁶ As the rash progressed, that diagnosis became less likely. Exanthematous drug eruptions can appear within two weeks of starting a medication and present as diffuse, erythematous macules that spare the hands and feet.⁷

Lyme disease is caused by *Borrelia burgdorferi* transmitted by an *Ixodes* tick bite. Erythema migrans, an expanding red rash, is the characteristic sign of Lyme disease. Patients with Lyme disease may also have fevers, myalgia, and headaches.⁸

Rocky Mountain spotted fever is an infection caused by *Rickettsia rickettsii*. Symptoms begin about one week

after a bite from an infected tick. Symptoms include headache, myalgia, confusion, abdominal pain, and rash. The typical rash pattern is blanching, erythematous macules on the ankles and wrists that become maculopapular and spread centrally to the trunk.⁹

Thrombotic thrombocytopenic purpura is a coagulation disorder that results in clot formation in small vessels throughout the body. It presents as a pentad of microangiopathic hemolytic anemia, thrombocytopenia that leads to purpura, neurologic symptoms such as altered mental status, fever, and renal failure.¹⁰

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REFERENCES

- Owen C, Bahrami S, Malone JC, Callen JP, Kulp-Shorten CL. African tick bite fever: a not-so-uncommon illness in international travelers. *Arch Dermatol*. 2006;142(10):1312-1314.
- Jensenius M, Fournier PE, Vene S, et al. African tick bite fever in travelers to rural sub-Equatorial Africa. *Clin Infect Dis*. 2003;36(11):1411-1417.
- Chapman AS, Bakken JS, Folk SM, et al. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichiosis, and anaplasmosis—United States: a practical guide for physicians and other health-care and public health professionals. *MMWR Recomm Rep*. 2006;55(RR-4):1-27.
- Bohaty BR, Hebert AA. Images in clinical medicine: African tick-bite fever after a game-hunting expedition. *N Engl J Med*. 2015;372(10):e14.
- Bouvresse S, Del Giudice P, Franck N, et al. Two cases of cellulitis in the course of African tick bite fever: a fortuitous association? *Dermatology*. 2008;217(2):140-142.
- Herchline TE. Cellulitis. Updated August 19, 2015. Medscape. <http://emedicine.medscape.com/article/214222-overview>. Accessed March 24, 2016.
- Blume J. Drug eruptions. Updated October 9, 2015. Medscape. <http://emedicine.medscape.com/article/1049474-overview>. Accessed March 24, 2016.
- Meyerhoff J. Lyme disease. Updated March 15, 2016. Medscape. <http://emedicine.medscape.com/article/330178-overview>. Accessed March 24, 2016.
- Rathore MH. Rickettsial infection. Updated October 7, 2015. Medscape. <http://reference.medscape.com/article/968385-clinical#b4>. Accessed March 24, 2016.
- Wun T. Thrombotic thrombocytopenic purpura. Updated November 18, 2015. Medscape. <http://emedicine.medscape.com/article/206598-overview>. Accessed March 24, 2016. ■