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Case Report

Black spots in the returning traveler

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Abstract

African tick bite fever (ATBF) is a rickettsial infection that should be considered as the cause of fever in travelers returning from endemic regions of sub-Saharan Africa or the Caribbean. Patients typically present with a flu-like syndrome and may demonstrate one or more cutaneous inoculation eschars as a diagnostic key. We present a case of ATBF in a pregnant woman following her trip to Swaziland. Her symptoms rapidly improved with institution of effective antimicrobial treatment with azithromycin and rifampin; she made a full recovery.

Keywords: Infectious disease

Introduction

The rickettsioses are divided into 3 groups: spotted fever, typhus, and scrub typhus. ATBF is a spotted-fever-type rickettsiosis caused by *Rickettsia africae* [1] and transmitted by the *Amblyomma* (*A. variegatum, A. hebraeum*) ticks present in sub-Saharan Africa and several islands in the Caribbean. The disease is distinct from the potentially fatal Mediterranean spotted fever caused by *Rickettsia conorii* infection; although the endemic areas overlap, ATBF demonstrates a milder clinical course [1,2].

ATBF is a relatively common cause of fever in travelers returning from endemic regions [2]. The disease typically presents with a flu-like illness 1-2 weeks after exposure. The systemic manifestations include high fever, fatigue, headache, and neck pain [1,2]. The most characteristic cutaneous manifestation is the inoculation eschar or "tache noir." The telltale lesion consists of a small necrotic ulcer with an erythematous rim, often with associated regional lymphadenopathy. One or more of these lesions may be present in > 50% of patients, most commonly in the folds areas [2]. This contrasts with Mediterranean spotted fever in which there is a typically a single inoculation eschar. An exanthem, as typically seen with Mediterranean spotted fever, may be absent in ATBF [1]. However, a significant minority of individuals with ATBF (15-46% of patients) also demonstrate an eruption; this tends to be most pronounced close to inoculation sites and may be maculopapular, pustular, or vesicular [1,2]. Aphthae of the oral mucosa have also been reported [1,2].

Other signs of ATBF may include lab abnormalities, including lymphopenia, thombocytopenia, transaminitis, and elevated inflammatory markers [2]. Skin biopsy typically demonstrates a lymphohistiocytic vasculitis, which is characteristic of rickettsial infections [3]. Complications are rare in patients with ATBF and fatalities have not been reported.

Case synopsis

A previously healthy 30-year-old woman at 20 weeks gestation presented with fever, headache, neck pain, and a new skin lesion on the left shoulder. She had just returned from a trip to Swaziland where she had visited wildlife attractions. On exam, she appeared well, with normal vital signs. On the left shoulder there was a punched out, necrotic appearing ulcer with a deeply erythematous to violaceous rim (Figure 1). Tender regional lymphadenopathy was present. Her husband, accompanying her to the clinic visit, had similar symptoms and 2 similar lesions. Skin biopsy demonstrated necrosis of epidermis, adnexal epithelium, and superficial dermis; a dense perivascular and periadnexal infiltrate of mononuclear cells with scattered neutrophils; and swelling of dermal vascular endothelium with some fibrinoid material (Figure 2, Figure 3). At the time of biopsy, skin tissue was also sent to the CDC and was positive for spotted fever type rickettsia on immunohistochemistry. In addition, serologies done by the CDC included *R. africae* titers of 1:128 and *R. conorii* titers of 1:64, supporting the diagnosis of ATBF.

Figure 1. Skin lesion on the left shoulder.

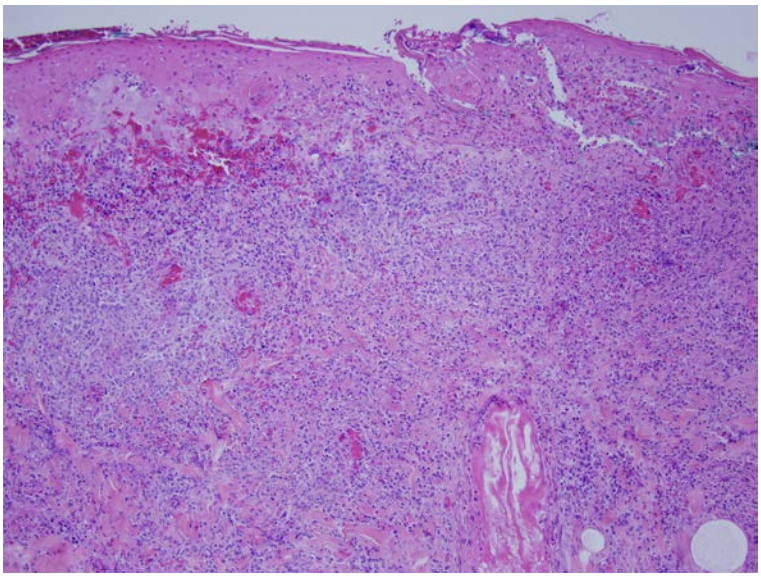

Figure 2. H&E, 10x

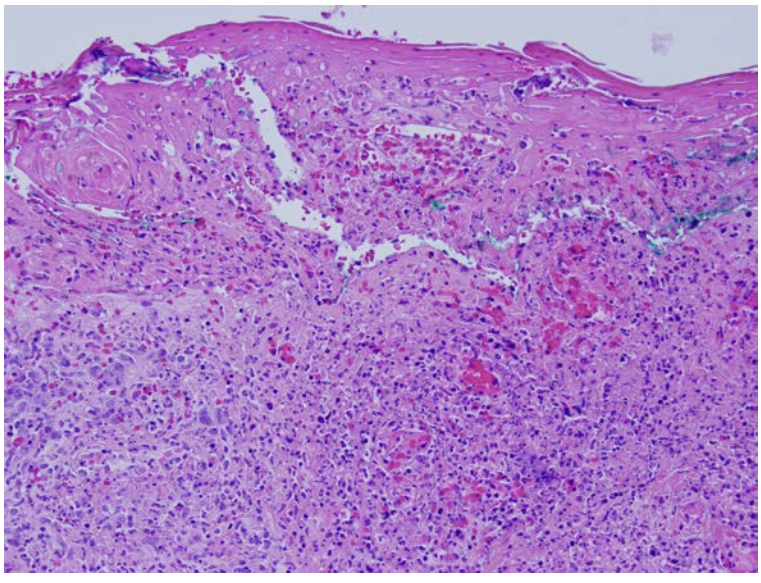

Figure 3. H&E, 20x.

Discussion

The constellation of fever, headache, myalgia, and inoculation eschar or tache noir (literally “black spot” in French) in the traveler returning from an endemic area is highly suggestive of ATBF. Multiple inoculation eschars in a single individual and/or among multiple individuals in a single group of travelers (e.g. our patient and her husband) are common and likely reflective of: 1) the tendency of *Amblyomma* ticks to aggressively attack in groups and 2) the high rate of *R africae* infection in the vector ticks [2,4].

The clinical differential diagnosis of this necrotic lesion includes primarily infectious entities, including rickettsial pox or other rickettsial infections, staph or strep ecthyma or ecthyma gangrenosum, ulceroglandular diseases such as anthrax or tularemia, deep fungal infection such as fusariosis or aspergillosis, and leishmaniasis; non-infectious causes such as early pyoderma gangrenosum, arthropod bite, or thromboembolic disease could also be considered. The histopathological differential diagnosis includes other rickettsial infections. The specific diagnosis of ATBF can be confirmed by serologies, immunohistochemistry, or PCR on skin and/or blood [3].

Empiric antibiotic treatment is recommended for suspected tick-related bacterial infection [5]. Treatment is particularly recommended for more severe presentations and may shorten disease duration [2]. The agent of choice in non-pregnant individuals >8 years old is generally doxycycline (100 mg BID given for 7-10 days) [2]. Symptoms may improve after 24-48 hours of therapy. Of note, individuals native to the region are likely infected early in life with subclinical disease not requiring treatment [2,6].

Prevention in the departing traveler is an important aspect of management. Tourists traveling to endemic areas are likely to be exposed to the vector ticks if they travel to rural areas [2]. Furthermore, the infection rates in the ticks is high (30-70%) [2]. Safeguards include wearing protective clothing treated with acarides and using diethyl-3-methylbenzamide DEET containing repellants with frequent reapplication [2].

Our literature review revealed neither prior cases of vaginal aphthae associated with ATBF nor cases of ATBF in pregnancy. Treatment decisions in this case were based on prior reports of Mediterranean spotted fever in pregnant patients [7]. The patient was started on azithromycin. She continued to have symptoms and rifampin was therefore added 3 days later with rapid improvement and full recovery. This may represent azithromycin failure and highlights the need to clarify optimal management of rickettsial disease in pregnancy.

Conclusions

ATBF should be considered as a cause of fever in the returning traveler. Whereas complications are rare, dermatologists should be aware of this diagnosis because the skin lesions are characteristic and effective treatment can speed disease resolution.

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