Rickettsial Infections

Traveler Summary

Key Points

- Rickettsial infections are caused by bacterial organisms found worldwide and are transmitted to humans through the bite or feces of fleas, ticks, or mites.
- Risk is high for travelers camping or hiking through wooded areas or trails lined with high grass and brush, as well as on safaris in the wilderness of Africa, especially southern Africa. Contact with rodents carrying lice, fleas, or mites can also result in exposure to rickettsial infections.
- Symptoms are variable and include fever, headache, rashes, and swollen lymph glands.
- Consequences of infection by some types of rickettsiae can include mental confusion, liver inflammation, and kidney failure.
- Prevention includes wearing long, light-colored trousers tucked into boots when hiking and observing personal protective measures against fleas, mites, and tick bites.
- No vaccine or preventive drugs are available.

Introduction

Rickettsial infections are caused by bacterial organisms (Rickettsiae), which are found throughout the world. Rickettsiae live in small insects such as ticks, fleas, mites, and lice and can infect mammals (including humans), but cannot survive for any significant period outside their host. Among returned travelers, rickettsial diseases have been estimated to be the fourth most common cause of fever, with symptoms such as rash, abdominal pain, and a dry, black/dark scab at the site of the infecting bite.

Risk Areas

Rickettsial infections are usually acquired during late spring and summer due to increased activity of the insects during this period. African Tickbite Fever (ATBF) is the most commonly reported rickettsial infection acquired during travel and occurs in southern Africa (especially Botswana, South Africa, and Zimbabwe). Mediterranean Spotted fever (MSF), reported among returning US and UK travelers, occurs over much of Africa, Europe, India, and the Middle East; whereas Rocky Mountain Spotted fever (RMSF) is commonly found throughout Canada, parts of Central and South America, and the US

Scrub typhus is common on South Asia and in northern Australia, south-central Russia, Southeast Asia, and the South Pacific. Murine typhus (flea-borne typhus) is widely distributed in the tropics and subtropics and in port cities and coastal regions with rodents and has been reported among travelers returning from Africa, the Mediterranean Basin, and Southeast Asia.

Transmission

Tick-borne rickettsioses are often acquired in rural settings in risk areas; however, urban transmission also occurs. Most rickettsial infections are transmitted to humans by the bite or feces of fleas, ticks, mites, or lice. Even the smallest forms of ticks (such as larvae) can transmit the infection to humans, meaning that many infected individuals do not recall a tick bite before symptoms appear. Direct human-to-human transmission does not occur. Scrub typhus is transmitted by a biting mite associated with transitional vegetation in the area between forest and clearing (known as scrub).

Risk Factors

Risk of acquiring rickettsial infections is highest for travelers in risk areas who engage in outdoor activities (e.g., camping, fishing, hiking, and hunting) in brush areas, near wooded areas or areas with high grass, or who go on safaris in the wilderness of Africa (especially southern Africa). Risk of acquiring murine typhus is greatest for travelers in risk areas who are exposed to flea-infested cats and dogs or who reside in areas infested with rodents.

Symptoms

Symptoms appear about 1 to 2 weeks following exposure; common symptoms of most rickettsial diseases include fever, headache, and tiredness. Incubation periods are variable: 2 to 14 days for RMSF, 6 to 10 days for MSF, 4 to 10 days for ATBF, and 6 to 18 days for scrub typhus.

ATBF is usually milder than most rickettsial diseases and, in addition to the common symptoms, features a dry, black/dark scab at the site of the infecting bite. Persons infected with MSF may develop common symptoms of rickettsial diseases as well as a rash and dry, black/dark scabs. RMSF infection may result in abdominal pain, nausea, and rash in addition to the common symptoms. Individuals infected with murine typhus may also develop a rash; additional symptoms of scrub typhus include dry, black/dark scabs, cough, and enlarged lymph nodes.

Consequences of Infection

Most rickettsial diseases cause moderately severe illness but RMSF, MSF, and scrub typhus may be life threatening and may result in death in 20% to 60% of untreated cases. Murine typhus may progress to more severe symptoms, such as fluid accumulation in the lungs, inflammation of the liver or brain, and kidney failure; patients often require hospitalization.

Need for Medical Assistance

Rickettsial diseases can be difficult to diagnose, and complications can arise anytime during the illness. Travelers who develop symptoms of rickettsial diseases, especially a dry, black/dark scab at the site of the infecting bite, should seek medical attention because simple oral antibiotics are rapidly effective. Where medical care is not be available within a reasonable time, a traveler may be prescribed (prior to travel) an antibiotic for self-treatment until evaluation by a health care provider is possible.

Prevention

The main prevention strategy is to avoid exposure to ticks, mites, fleas, and infected animals.

- Use standard insect precautions and avoid direct contact with known animal carriers (typically dogs, cats, and rodents and their fleas) whenever possible. (See ***Insect Precautions***.)
- Personal protective measures effective against ticks and mites are recommended in brush areas.
- Persons who engage in outdoor activities in endemic areas should:
  - Wear long sleeves and tuck pant legs into socks.
  - Treat outer clothing with pyrethroids such as permethrin.
  - Apply tick repellents containing DEET (although DEET's effectiveness against the tick that transmits TBF wanes after 2 hours).
  - Perform regular body checks for ticks (including hairy parts of the body); promptly remove any ticks found, as recommended in ***Arthropod Infestation and Envenomation in Travelers***.

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