Fungal Infections

Traveler Summary

This article discusses coccidioidomycosis (also known as valley fever), histoplasmosis, paracoccidioidomycosis, blastomycosis, and talaromycosis. The most frequently occurring human fungal infections affect the skin and are troublesome in warm, damp climates; these organisms are not discussed here.

Key Points

- Systemic fungal infections are caused by a variety of fungal organisms found anywhere in the world but most commonly in the Americas and certain regions in Asia and are transmitted via inhalation of dust contaminated with fungal spores.
- Risk exists for travelers going to affected areas who have extensive dust exposure or particularly risky contact. Persons with weakened immune systems are at increased risk. Systemic fungal infections due to travel are an uncommon cause of illness in returned travelers.
- Symptoms are variable and include fever, chest pain, rashes, difficulty breathing, and weight loss.
- Consequences of infection can include skin sores and multi-organ failure.
- Prevention includes avoiding risk factors.
- No vaccine or preventive drugs are available; however, once diagnosed (it may take weeks to years to present with symptoms), most cases respond to therapy.

Introduction

Fungal infections affecting the entire body are generally acquired through inhalation of spores or fungal filaments found in dust, soil, bird/bat guano, or decaying vegetation, and most often affect the respiratory system; these diseases may be common in indigenous populations but are rare in travelers without specific exposures. The most frequently occurring human fungal infections cause self-limiting superficial rashes and are troublesome in warm, damp climates. In healthy persons, even the systemic fungal infections are generally symptom free or self-limited. However, infection can lead to significant disease, particularly in persons with weakened immune systems.

Risk Areas

Specific areas of risk by pathogen are as follows:

- Coccidioidomycosis occurs mainly in hot, dry areas of the southwestern US, parts of Mexico, and Central and South America. Incidence is highest during seasonal dry periods.
- Histoplasmosis, by far the most common deep fungal infection of travelers, occurs worldwide and is especially well recognized in central and eastern US and parts of Central and South America, especially around river valleys.
- Paracoccidioidomycosis occurs mainly in the tropical Americas, from Mexico to Argentina, with most cases (80%) in Brazil occurring among agricultural workers near rainforest areas. Cases are uncommon in travelers going to endemic areas.
- Blastomycosis occurs mostly in river valleys in the midwestern, south-central, and southeastern US, as well as in central Canada.
- Talaromycosis occurs mainly in southeast Asia (rarely in other parts of Asia), including northern Thailand, Vietnam, Hong Kong, Taiwan, and southern China.

Transmission

Fungal spores or mycelia (root-like fungal structure) are transmitted via inhalation of dust from the environment, especially after a natural disaster or dust storm. Exposure to bat guano or bird droppings, especially in caves (or at sites where bats roost), is associated with histoplasmosis. Exposure in areas where vegetation is disturbed in forests, near water sources, and with sandy, acidic soil is associated with paracoccidioidomycosis. Coccidioidomycosis and talaromycosis may be acquired by inadvertent embedding of the fungal organism into the skin.

Risk Factors

Risk exists for travelers going to and temporary residents of affected areas after participating in activities that expose them to dust, such as construction, landscaping, mining, agriculture, archaeological excavation, and military maneuvers or recreational pursuits, such as dirt biking, camping, and caving or spelunking. Contact with or consumption of bamboo rats in Thailand is also a risk factor. Coccidioidomycosis in military personnel has been associated with ground- and air-vehicle activities in endemic areas. Paracoccidioidomycosis occurs most commonly in males in affected areas, especially in forestry exposures.

Persons with medical conditions resulting in weakened immune systems—such as HIV/AIDS and organ transplantation, and use of medications, such as corticosteroids or TNF-inhibitors—are more susceptible to contracting fungal infections, which then spread to other parts of the body.

Symptoms

Infected persons are often symptom free. When acutely ill, an influenza-like illness (characterized by fever, chest pain, headache, muscle aches, rash, dry cough, weight loss, and malaise) may occur up to 3 weeks after exposure and resolve over several weeks, although fatigue and malaise may last longer. Disseminated infection may occur in more severe cases involving any organ system, with symptoms dependent on the involved organ system. Talaromycosis infection is not seen in healthy adults or children but is a major opportunistic infection in persons with HIV or AIDS; blisters may appear on the face, trunk, and extremities, and skin sores may develop.

Consequences of Infection

Long-term consequences of self-limited or treated mild-to-moderate inhalational fungal infections in healthy persons are uncommon. However, persistent and latent infections may occur and become problematic later in life if a condition that weakens the immune system were to occur. A known past systemic fungal infection and/or travel history to high-risk areas should remain part of a medical history. Vulnerable persons may experience a variety of complications, including severe lung disease, multi-organ dysfunction, skin ulcers/sores, nervous system disorders, and bony lesions.

Need for Medical Assistance

Travelers who experience respiratory symptoms or systemic symptoms lasting longer than 1 week following exposure in an affected area should seek medical attention. Some medical providers choose to treat mild coccidioidomycosis and histoplasmosis with an antifungal drug to prevent more serious infection from developing, especially for persons at risk for severe disease.

Prevention

Nonvaccine

Travelers should avoid the risk factors described above; avoid, at all times, caves and other sites where bats roost; and stay indoors during dust storms. If heavy exposure to dust is unavoidable, a well-fitted respirator (e.g., N95 mask for which the traveler has been tested for fit) should be worn. Injuries should be cleaned with soap and water.

Travelers with weakened immune systems or those taking immunosuppressive medications should take extra care in avoiding risk factors.