



Chapter 3

Infectious Diseases Related To Travel

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Coccidioidomycosis

Loretta S. Chang, Tom M. Chiller

INFECTIOUS AGENT

Coccidioidomycosis, or “valley fever,” is a disease caused by the fungi *Coccidioides immitis* and *C. posadasii*.

MODE OF TRANSMISSION

The disease is acquired by inhalation of fungal conidia from dust found in ambient air or generated by soil-disrupting human activities or natural disasters. Coccidioidomycosis is not transmitted from person to person.

EPIDEMIOLOGY

Coccidioides spp. are endemic in arid regions. In the United States, the areas with the highest incidence are primarily in the Sonoran Desert in Arizona ([Phoenix \(#\)](#) and Tucson metropolitan areas) and the San Joaquin Valley in California. Other endemic areas in the United States include parts of New Mexico, western Texas, and parts of Utah. Outside the United States, coccidioidomycosis is endemic in parts of Argentina, Brazil, Colombia, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, and Venezuela.

Up to 29% of community-acquired pneumonias in endemic areas may be due to *Coccidioides* infection. In disease-endemic areas, people may be at increased risk for disease if they participate in, or are present during, activities that disturb the ground and result in exposure to dust, including construction, landscaping, mining, agriculture, archaeological excavation, military maneuvers, and recreational pursuits such as dirt biking. Natural events such as earthquakes or windstorms that generate dust clouds increase the risk of exposure. However, cases may also occur after travel to an endemic area in the absence of these exposures.

CLINICAL PRESENTATION

The incubation period ranges from 7 to 21 days. Most infections (60%) are asymptomatic. Symptomatic people will generally have disease ranging from a self-limited influenzalike illness, characterized by fever, headache, rash, muscle aches, dry cough, weight loss (#), and malaise, to primary pulmonary coccidioidomycosis, characterized by pneumonia with changes on chest radiography.

In rare instances, severe lung disease (such as cavitary pneumonia) or dissemination to the central nervous system, joints, bones, or skin may develop. People at increased risk for severe pulmonary disease are the elderly, those with diabetes (#) or recent smoking history, and people of low socioeconomic status. People at increased risk for disseminated disease include African Americans and Filipinos, those with immunocompromising conditions (such as HIV), and women in the third trimester of pregnancy. Once infected with *Coccidioides*, a person is immune to reinfection. People with no prior exposure to coccidioidomycosis are more likely to become infected.

DIAGNOSIS

Coccidioidomycosis is best diagnosed by using serologic, histopathologic, and culture methods. Serologic tests are useful to confirm (#) diagnoses and provide prognostic information. Because clinical laboratories use different diagnostic test kits, positive results should be confirmed in a reference laboratory.

Spherules can be visualized in infected body fluid specimens (pleural fluid, bronchoalveolar lavage) and biopsy specimens of skin lesions or organs. The presence of a mature spherule with endospores is pathognomonic of infection. An EIA antigen assay for testing urine, serum, plasma, bronchoalveolar lavage, cerebrospinal fluid, or other sterile body fluids is commercially available. Positive levels of antigen in urine have a sensitivity of 71% to diagnose more severe forms of coccidioidomycosis. Cross-reaction occurs in about 10% of patients with other endemic mycoses.

TREATMENT

The benefit of treating people with uncomplicated, acute primary coccidioidomycosis is not well studied. Although some experts feel that people without risk for severe or disseminated disease do not require treatment because the illness is self-limited, others propose treatment to reduce the intensity or duration of symptoms.

People at high risk for dissemination should receive antifungal therapy when diagnosed with acute coccidioidomycosis. Additionally, people with severe acute pulmonary disease, chronic pulmonary infection, or disseminated disease should receive antifungal therapy. Depending on the clinical situation, azole antifungal agents (such as fluconazole or itraconazole) or amphotericin B may be used for treatment. All patients with clinical disease consistent with coccidioidomycosis should be tested for primary infection and followed closely to monitor the course of disease and to document improvement. An infectious diseases specialist should manage these patients.

PREVENTIVE MEASURES FOR TRAVELERS

No vaccine is available. It is not possible to completely prevent infection with *Coccidioides* spp., because the spores are aerosolized in endemic areas. However, travelers, especially those at increased risk for severe and disseminated disease, can decrease their risk by limiting their exposure to outdoor dust in disease-endemic areas, especially during dust storms. Dust-control measures, such as wetting soil before disturbing the earth, may be effective. Other protective

measures aimed at reducing exposure to dust, such as wearing well-fitted dust masks capable of filtering particles as small as 0.4 μm and using vehicles with enclosed, air-conditioned cabs can provide added protection for those with high risk of occupational exposure to dust.

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Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA
30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348, New Hours of Operation
8am-8pm ET/Monday-Friday
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