Coccidioidomycosis
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Coccidioidomycosis

(Valley fever, San Joaquin fever, Desert fever, Desert rheumatism and coccidioidal granuloma)

Overview[1,2,3,4]

Coccidioidomycosis is a fungal disease caused by the *Coccidioides* species including *Coccidioides immitis* and *Coccidioides posadasii*. The natural reservoir of the fungi is soil typically from areas with an arid climate. The fungi and resulting disease is endemic in the southwestern states (California, New Mexico, Arizona, Nevada, Utah, and Texas) and parts of Mexico, Central and South America. However, the disease has been reported in person who merely traveled through an endemic area. Approximately 10-50% of persons who live in an endemic area will have evidence of exposure to *Coccidioides*.

Infection with *Coccidioides* typically results from the inhalation of the fungal spores that can become airborne after disturbance of the contaminated soil through activities or events such as construction, dust storms, and earthquakes. Coccidioidomycosis is not spread person-to-person or animal-to-human, however, cases have resulted from laboratory accidents. The incubation period for primary infection is 1-4 weeks, though disseminated disease may develop years after the primary infection.

The majority of persons (60%) with *Coccidioides* infections will not experience any symptoms. For those with symptoms, the primary infection can resemble an acute influenza-like illness including fever, cough, shortness of breath, headache, rash, and muscle aches. Symptoms typically last weeks to months and most ill persons will make a full recovery. A small percentage of persons will develop a potentially fatal pulmonary infection or widespread disseminated infection affecting the meninges, soft tissues, joints, and bone. A variety of serological tests have been developed to diagnose coccidioidomycosis. Diagnosis can also be made through microscopic examination or culture of sputum, pus, urine, CSF or biopsies of skin lesions or organs. Note: Handling cultures of *Coccidioides* is extremely hazardous and must be carried out in a class II biological safety cabinet under BSL-3 containment.

Symptoms from the acute infection may resolve on their own without treatment. However, some health care providers prefer to prescribe antifungal drugs to treat patients with acute, uncomplicated coccidioidomycosis. There is not enough information about whether treating acute, uncomplicated pulmonary coccidioidomycosis is beneficial or not, although many experts feel that persons at risk for developing severe diseases should received treatment. Treatment includes the use of antifungal drugs, such as fluconazole, prescribed by a physician. In more severe infections, treatment with anifungal drugs is necessary.

High-risk groups include persons living in areas with endemic disease who have occupations exposing them to dust. Military trainees participating in exercises in endemic areas are also at risk. Persons at high risk for disseminated disease include those with AIDS or other immunocompromising conditions, African-Americans and Asians, people of Filipino descent and pregnant women during the third trimester.

For a complete description of coccidioidomycosis, refer to the following texts:

- *Control of Communicable Diseases Manual*. (CCDM), American Public Health Association. 19th ed. 2008.
- American Academy of Pediatrics. *Red Book: 2009 Report of the Committee on Infectious Diseases.* 28th ed. 2009.

Case Definition[5]

Clinical description:

Infection may be asymptomatic or may produce an acute or chronic disease. Although the disease initially resembles an influenza-like or pneumonia-like febrile illness primarily involving the bronchopulmonary system, dissemination can occur to multiple organ systems. An illness is typically characterized by one or more of the following:

- Influenza-like signs and symptoms (e.g., fever, chest pain, cough, myalgia, arthralgia, and headache).
- Pneumonia or other pulmonary lesion, diagnosed by chest radiograph.
- Erythema nodosum or erythema multiforme rash.
- Involvement of bones, joints, or skin by dissemination.
- Meningitis.
- Involvement of viscera and lymph nodes.

Laboratory criteria for diagnosis:

A confirmed case must meet at least one of the following laboratory criteria for diagnosis:

- Cultural, histopathologic, or molecular evidence of presence of *Coccidioides* species, or
- Positive serologic test for coccidioidal antibodies in serum or cerebrospinal fluid, or other body fluids by:
  - Detection of coccidioidal immunoglobulin M (IgM) by immunodiffusion, enzyme immunoassay (EIA), latex agglutination, or tube precipitin, or
  - Detection of coccidioidal immunoglobulin G (IgG) by immunodiffusion, EIA, or complement fixation, or
  - Coccidioidal skin-test conversion from negative to positive after onset of clinical signs and symptoms.

Case classification:

Confirmed: A case that meets the clinical case definition and is laboratory confirmed.

Information Needed for Investigation

Verify the diagnosis. Identify and list all completed laboratory tests and subsequent test results for *Coccidioides*.

Identify risk factors for exposure. *Coccidioides* species are found extensively in soil from endemic areas and are not transmitted person-to-person. For cases appearing in non-endemic areas it is important to investigate the possible source of the infection. The investigation should include determining residence, work exposure and travel history of the case. Obtain travel history for the past 30 days to endemic areas in the southwestern United States, including areas in California, New Mexico, Texas, Utah; northern Mexico, Central and South America and record in the "Comments" sections on the CD-1 report form or document the information in WebSurv.

Notification

Immediately contact the District Communicable Disease Coordinator, the Senior Epidemiology Specialist for the District, or the Department of Health and Senior Services Situation Room (DSR) at 800-392-0272 (24/7) if an outbreak of coccidioidomycosis is suspected or for a case of coccidioidomycosis occurring in a high-risk setting or job such as a laboratory worker.

Control Measures

Standard precautions are recommended for the care of a person with coccidioidomycosis. Care should be taken in handling, changing, and discarding dressings, casts, and similar materials in which contamination could occur.

Measures to control dust are recommended in areas with endemic infection, including construction sites and other activities that cause excessive soil disturbance. Immunocompromised people residing in or traveling to areas with endemic infection should be counseled to avoid exposure to activities that may aerosolize spores in contaminated soil.

Laboratory Procedures

Specimens:

Contact the District Communicable Disease Coordinator or the Senior Epidemiology Specialist for the District for assistance. The Missouri State Public Health Laboratory does not culture for *Coccidioides*.

Reporting Requirements

Coccidioidomycosis is a Category 3 disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services (DHSS) within three (3) calendar days of first knowledge or suspicion.

1. For confirmed and probable cases, complete a "Disease Case Report" (CD-1).
2. Entry of the completed CD-1 into WebSurv negates the need for the paper CD-1 to be forwarded to the District Health Office.
3. All outbreaks or "suspected" outbreaks must be reported immediately (by phone, fax or e-mail) to the District Communicable Disease Coordinator or the Senior Epidemiology Specialist or the Department of Health and Senior Services Situation Room (DSR) at 800-392-0272 (24/7). This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51).
4. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the District Communicable Disease Coordinator.

References

1. *Control of Communicable Diseases Manual*. "Coccidioidomycosis (Valley fever, San Joaquin fever, Desert fever, Desert rheumatism, Coccidioidal granuloma)." Heymann, David L., ed 19th ed. Washington, DC: American Public Health Association, 2008: 139-141.
2. American Academy of Pediatrics. "Coccidioidomycosis". In: Pickering LK, Baker CJ, Long SS, McMillan JA, eds. *Red Book: 2009 Report of the Committee on Infectious Diseases.* 28th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006: 266-268.
3. Galgiani, J. (2005). *Coccidioides* Species. In G.L. Mandell, J.E. Bennett & R.D. Dolin (Eds.), *Principles and Practice of Infectious Diseases: Vol. 2*. (7th ed., pp. 3333-3343). Philadelphia: Elsevier Churchill Livingstone.
4. Centers for Disease Control and Prevention. Coccidioidomycosis "Frequently asked Questions". National Center for Emerging and Zoonotic Infectious Diseases. http://www.cdc.gov/nczved/dfbmd/disease_listing/coccidioidomycosis_gi.html (12/30/11)
5. Centers for Disease Control and Prevention. (2011). Case definitions for infectious conditions under public health surveillance. http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/coccidioid_current.htm (12/30/11)