



# Q / Which risk factors and signs and symptoms are associated with coccidioidomycosis?

## EVIDENCE-BASED ANSWER

**A** / **RISK FACTORS** for coccidioidomycosis, or valley fever, include lower respiratory tract symptoms lasting longer than 14 days, chest pain, rash, having lived in endemic areas fewer than 10 years, and diabetes mellitus or immunosuppressive conditions (strength of recommendation [SOR]: **B**, several

prospective cohort and case-control studies).

The most common signs and symptoms include cough (74%), fever (56%), night sweats (35%), pleuritic chest pain (33%), chills (28%), dyspnea (27%), weight loss (21%), and rash (14%) (SOR: **B**, retrospective cohort study).

## Evidence summary

A 2013 surveillance report by the Centers for Disease Control and Prevention that included 111,717 patients in 28 states and the District of Columbia found an 8-fold increase in reported coccidioidomycosis in endemic areas from 1998 to 2011 (age-adjusted incidence rates: 5.3 per 100,000 in 1998 and 42.6 per 100,000 in 2011). Cases in nonendemic states increased 40-fold in the same time period, from 6 cases to 240.<sup>1</sup> The disease is endemic in the southwest United States and northwest Mexico.

### **Risk factors include persistent symptoms, chest pain, diabetes, immunosuppression**

A 2008 case-control study of 136 patients in Phoenix, Arizona (an endemic area) found that 15% of the patients diagnosed with community-acquired pneumonia (CAP) had coccidioidomycosis on serologic testing. Risk factors for CAP caused by coccidioidomycosis in this population were symptom duration longer than 14 days (odds ratio [OR]=5.0; 95% confidence interval [CI], 2.1-15.7), age younger than 18 years (OR=5.5; 95% CI, 2.1-15.3), chest pain (OR=4.6; 95%

CI, 1.8-11.8), and diabetes mellitus or an immunosuppressive condition (OR=3.8; 95% CI, 1.0-16.5).<sup>2</sup>

### **Abnormal chest X-rays, myalgia—and a rash**

A 2006 prospective cohort study of 55 patients in Tucson, Arizona, which is part of the endemic area, found that 29% of patients diagnosed with CAP tested serologically positive for coccidioidomycosis. Risk factors included fewer than 10 years of exposure to an endemic area (OR=4.11; 95% CI, 1.01-16.8). Chest radiograph abnormalities were more common in patients with CAP caused by coccidioidomycosis than patients without coccidioidomycosis (75% vs 25%,  $P=.005$ ). Myalgia is more common when coccidioidal pneumonia is present (69% vs 23%,  $P=.0022$ ).<sup>3</sup>

A 2009 prospective cohort study of 35 patients with CAP in Phoenix, Arizona found that 6 patients (17%) tested positive for coccidioidomycosis. Only 1 statistically significant risk factor was identified—half of patients with coccidioidomycosis exhibited a rash, while there were no rashes in the group without the disease ( $P=.002$ ).<sup>4</sup>

CONTINUED ON PAGE 756

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CONTINUED FROM PAGE 747

## Other common signs and symptoms

A retrospective cohort study in San Diego, California in 2004 evaluated and stratified 223 patients with known coccidioidomycosis for presenting symptoms, exam findings, and radiographic findings. The most common signs and symptoms at time of seropositive testing were cough (74%), fever (56%), night sweats (35%), pleuritic chest pain (33%), chills (28%), weight loss (21%), rash (14%), and arthralgia or myalgia (13% and 12%, respectively).<sup>5</sup>

Airspace opacity was the most common radiographic abnormality (58.8%); the second most common was pulmonary nodules (22.8%).<sup>5</sup> The study didn't compare the fre-

quency of these findings with noncoccidioidal pneumonia.

## Recommendations

In 2005 guidelines, the Infectious Diseases Society of America (IDSA) stated that the "management of coccidioidomycosis first involves recognizing that a coccidioidal infection exists, defining the extent of infection, and identifying host factors that predispose to disease severity."<sup>6</sup> The IDSA didn't give specific recommendations regarding how to diagnose or differentiate coccidioidal infection from CAP.

JFP

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