
Pulmonary Mycetoma due to
Coccidioides immitis*

Haragopal Thadepalli, M.D.;** Frank A. Salem, M.D.;† Ashis K. Mandal, M.D., F.C.C.P.;‡ Kamalakar Rambhatla, M.D.;§ and Hans E. Einstein, M.D., F.C.C.P.||

Pulmonary mycetoma due to Coccidioides immitis has been reported on three occasions. The present case is the fourth such report occurring in a patient with widely disseminated disease. Spheres and hyphae were found in the specimen. While the active pulmonary and extra-pulmonary lesions responded well to therapy with amphotericin B, resection was required to eliminate the residual mycetoma and its attendant hemoptysis.

Pulmonary mycetoma (fungus ball) occurs most commonly as a saprophytic colonization of preexisting pulmonary cavitation by Aspergillus or Candida or occasionally by Nocardia, species of Phycomycetes, and Allescheria boydii. This characterized is seen in patients who have recovered from chronic suppurrative pulmonary disease, including tuberculosis and diabetes, or in other compromised hosts as a so-called opportunistic event. Coccidioidal mycetoma has been reported on three previous occasions as a late sequela of previous primary pulmonary coccidioidal infection.1,6 This patient had widely disseminated disease which finally re-

solved, leaving the mycetoma as an isolated pulmonary residual infection.

CASE REPORT

A 28-year-old black man from southern California was admitted to the hospital in March, 1973 with fever, night sweats, weight loss, hemoptysis, and a maculopapular rash of five weeks' duration. Pneumonitis in the right lower lobe, accompanied by hepatosplenomegaly and generalized lymphadenopathy, was noted on physical examination. In addition, multiple fluctuant nodules were observed over the abdomen and left middle finger. Cultures from these were positive for Coccidioides immitis. Further work-up showed involvement of the meninges and multiple bones. The patient was given therapy with amphotericin B (2 gm total, as well as 20 mg intrathecally). The complement fixation titer was positive in the serum (1:1,024) and the cerebral spinal fluid (1:8). A skin test was positive with a 1:100 dilution of coccidioidin. After treatment, tests for complement fixation in both the serum and cerebrospinal fluid had become negative, so the patient was discharged.

In May of 1974, the patient was readmitted, having developed fluctuant masses over the posterior thorax and in the supraclavicular areas. Chest x-ray films then showed an air-fluid level in the mass in the right supraclavicular area and the cavitary lesion with a fungus ball in the right upper lobe (Fig 1). Needle aspiration of the mass on the back revealed purulent material which was positive on culture for C immitis. Injection of contrast medium showed multiple sinus tracts leading to both upper lobes and a collection in the base of the neck on the left. The complement-fixation titers had risen again to 1:128 in the serum and 1:4 in the cerebrospinal fluid, a second course of therapy with amphotericin was given (1 gm total, 20 mg intrathecally, and local treatment into a chest tube inserted for drainage into the area of an empyema). Again, the patient improved and was discharged.

The patient was readmitted in November 1975, with significant hemoptysis (up to 500 ml daily). Complement fixation tests were negative in both the spinal fluid and serum. A chest x-ray film showed the mycetoma (fungus ball) to be unchanged. A skin test with coccidioidin at this time was negative, and T-cell stimulation tests showed decreased function.7 Because of hemoptysis, the right upper lobe was resected. The resected lung and mycetoma are shown in Figure 2. Mycelial elements, as well as spherules, were seen microscopically (Fig 3 and 4), and culture was

---

*From the Departments of Internal Medicine, Surgery, and Pathology, Martin Luther King, Jr. General Hospital, Charles R. Drew Postgraduate School of Medicine, and the University of Southern California and University of California Schools of Medicine, Los Angeles.
**Assistant Professor of Medicine.
†Assistant Professor of Pathology.
‡Associate Professor of Surgery.
§Fellow in Infectious Diseases.
||Clinical Professor of Medicine.
Reprint requests: Dr. Thadepalli, 12021 South Wilmington, Los Angeles 90059

CHEST, 71: 3, MARCH, 1977
positive for \( C\) immitis. The patient was given an additional 1 gm of amphotericin during this time. His total intravenous therapy consisted of 4 gm of amphotericin B.

**DISCUSSION**

This patient had a primary coccidoidal mycetoma which persisted even though he was able to overcome widely disseminated disease involving the lungs, the pleural space (with formation of a bronchopleural fistula through the chest wall), the bones, and the central nervous system with a total dosage of 4 gm of amphotericin B, as well as appropriate local therapy. The fungus ball remained unchanged radiographically and ultimately required resection because of massive hemoptysis.

The finding of mycelial elements in residual pulmonary coccidioidal lesions has concerned clinicians since Puckett's original description, raising, as it does, the theoretic specter of contagion. While mycelial elements are a constant finding in both the sputum and specimens of patients with pulmonary coccidioidal cavitation, dry arthrospores, the actual "infective" portion of the saprophytic cycle, are not found. Contagion, therefore, has never been observed, in spite of diligent search.

This patient showed the previously reported finding of diminished immune response, both humoral (absent complement-fixing antibodies) and cell-mediated (negative coccidioidin skin test), in the latter stages of his disease. Decreased T-cell activity was also observed. It appears probable, therefore, that formation of a coccidioidal mycetoma is a manifestation of altered host immunity.

**ACKNOWLEDGMENT:** We thank Antonino Catanzaro, M.D., for evaluating the immunologic status of this patient.

**REFERENCES**