Traveller’s Coccidioidomycosis: Case Report of Pulmonary Infection Diagnosed in Israel

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A 60-year-old temporary Israeli resident travelled to Arizona, developed an influenzalike infection, and returned with a space-occupying lesion in the lung. Since the patient was a heavy smoker, lung cancer was suspected and he was operated on. A granuloma was reported on frozen sections, and Coccidioides immitis was revealed on stained preparations and by microbiological investigation. Coccidioidomycosis is unusual in Israel; therefore, it is important to be aware of this mycosis in patients who have a history of recent visits to areas of endemicity in North America, Central America, and South America.

Coccidioidomycosis is mainly a self-limiting respiratory infection well known in the United States and other New World countries (4, 8-10, 15-16). In the United States, the southwest, especially Arizona and the San Joaquin Valley of California, are recognized as areas in which Coccidioides immitis is endemic, and the disease has been described in many publications (1, 2, 6, 6a, 17). Sixty percent of patients with primary coccidioidomycosis are asymptomatic. The remaining 40% may demonstrate a mild to acute pulmonary infection with nonspecific influenzalike symptoms. A low percentage (0.2 to 0.5%) of infected individuals, especially Afro-Americans, Hispanics, Filipinos, and immunosuppressed people, are more susceptible to the development of a serious disease following systemic invasion. The outcome for such patients may be fatal if the condition is left untreated (2, 8, 11, 15, 15a).

According to Kuttin and Beemer (13), the only case of coccidioidomycosis recorded in Israel was diagnosed in 1948, when a 55-year-old temporary resident from the United States was hospitalized because of a suspected lung tumor, which turned out to be a granuloma caused by C. immitis. That case was virtually identical to the one described in the present report.

A 60-year-old man was referred to the Rambam Medical Center for a space-occupying lesion in the left upper lobe. Three months previously, he had spent 4 weeks in Arizona. Three to 4 weeks after the visit, the patient developed influenzalike symptoms, and a general practitioner in the United States prescribed antibacterial therapy. The patient’s complaints persisted, and he was hospitalized in Phoenix for fever and cough. Chest roentgenograms revealed a pneumonialike nonspecific pulmonary infiltrate in the left upper lobe. Three to four weeks after the onset of the initial symptoms, the patient returned to Israel. Serial chest X rays (Fig. 1) and computerized tomographic scans (Fig. 2) revealed a space-occupying lesion in the left upper lobe with left hilar involvement, but no cavity was seen. A bronchoscopy was performed, and transbronchial biopsies were found nonspecific, with no evidence of granulomata. Culturing of washings and tissue was not performed. Since the lesion failed to show any resolution after 6 weeks and the patient was a heavy smoker, lung cancer could not be ruled out. A left thoracotomy and wedge resection of the lesion were done, and tissue was sent for analysis of frozen sections and a microbiological investigation. A histological examination of stained tissue preparations (hematoxylin-eosin, Gomori, methenamine silver, and periodic acid-Schiff stains) revealed a granuloma, endospores, and spherules (Fig. 3) in various stages of maturity. Heavy growth of

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FIG. 1. Chest radiograph showing hilar and peripheral involvement of the left upper lobe (right).
FIG. 2. Computerized tomographic scan demonstrating a space-occupying lesion in the left upper lobe.

white, delicate, wooly, moldlike colonies appeared on Sabouraud’s dextrose agar (with and without chloramphenicol [50 µg/ml] and cycloheximide [500 µg/ml]) and blood agar plates after 2 to 3 days of incubation of lung and lymph node tissues at 28 and 37°C. Tease mounts of older colonies and slide cultures revealed arthroconidia within the mycelia, and the fungus was identified as *C. immitis*.

The isolate, tissue specimens, and patient’s serum were sent to the Division of Mycotic Diseases, Centers for Disease Control, Atlanta, Ga., for final identification and serodiagnosis. The isolate was positive in the exoantigen test for *C. immitis*. The tissue sections contained immature *C. immitis* spherules and a hyaline septate mycelium that resembled the hyphae of *Aspergillus or Fusarium* species. A complement fixation test for coccidioidomycosis was positive at a titer of 1:8, and the F precipitin, specific for coccidioidomycosis, was present in the immunofixation test.

Antifungal therapy is necessary in severe and complicated coccidioidomycosis or in cases with suspected systemic infection, a positive immunofixation test for F precipitin, and a complement fixation test titer of ≥1:8 (4, 10, 12, 18). Amphotericin B (5, 7, 14) and ketoconazole (2, 14, 18, 19) were the drugs of choice, but at present they are no longer considered the optimum drugs to use in cases of coccidioidomycosis; newer azoles, such as fluconazole, itraconazole, and others (2, 7), are available. Agar diffusion susceptibility tests were performed on 9-cm Sabouraud’s dextrose agar plates with disks containing antifungal agents from the Institut Pasteur (a modified Bauer-Kirby technique). The isolate was susceptible to ketoconazole but resistant to amphotericin B and 5-fluorocytosine (1 and 10 µg per disk).

The patient was treated with 200 mg of ketoconazole per day for 4 weeks. Complete recovery was recorded after a follow-up at 30 months.

Pulmonary coccidioidomycosis can mimic other diseases, including lung cancer (2, 3, 15, 15a, 17); therefore, it is important to submit material for culturing as well as cytological and histological diagnoses to obtain laboratory confirmation. These analyses should be done with care, because *C. immitis* is an extremely infectious fungus, and even experienced laboratory personnel can easily contract a laboratory infection (15, 15a, 20).

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REFERENCES


FIG. 3. Endospore-containing spherule of a granuloma in the lung (periodic acid-Schiff stain, ×2,000).