Photo Quiz

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TANAFFOS

A 26-Year-Old Man with Productive Cough, Hemoptysis, and Weight Loss

Faezeh Sharafi [1], Mitra Rezaei [2,3], Payam Tabarsi [3], Majid Marjani [3]

[1] Department of Regenerative Medicine, Royan Institute, Tehran, Iran, [2] Genomic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran, [3] Clinical Tuberculosis and Epidemiology Research Center, National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Correspondence to: Rezaei M

Address: Genomic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Email address: m.rezaie@sbmu.ac.ir

WHAT IS YOUR DIAGNOSIS?

An Iranian 26-year-old man was referred to our hospital with chief complaints of productive cough and hemoptysis. He presented with fever, cough, weight loss of 4 kg within the past month, and no history of other diseases. He also had a history of unprotected sexual contact and inhalational heroin abuse. On physical examination on the day of admission to our hospital, the patient was febrile (38.5 °C) with a pulse rate of 116 beats/min. Physical examination was unremarkable except for oropharyngeal candidiasis. The chest radiography (CXR) revealed a cavitary lesion in the left upper lobe (LUL) and parenchymal infiltration in the right upper lobe (RUL) (Figure 1A). The complete blood cell count results were normal except for a Hemoglobin count of 10.7 g/dl and a platelet count of 105,000/ml. The erythrocyte sedimentation rate was 97 mm/h. Alanine transaminase and Aspartate aminotransferase raised slightly to 54 mg/dl and 50 mg/dl (upper limit of normal: 40), respectively. The electrolyte profile, renal function test results, and urinalysis were normal. Therefore, we performed a lung computed tomography (CT) scan (Figure 1B). Sputum smears for acid-fast bacilli were negative three times. Empirical antibiotic therapy with Imipenem and Azithromycin was started. In complementary laboratory studies, test results were positive for Human Immunodeficiency virus (HIV) and Hepatitis C virus (enzyme-linked immunoassay and Polymerase Chain Reaction). Flow cytometry analysis of peripheral blood mononuclear cells demonstrated a CD4+ lymphocyte count of 13. No improvement in symptoms was obtained after empirical treatment. So, we repeated CXR and, after that, a lung CT scan which showed that pulmonary infiltration on the right side had worsened (Figure 1C and 1D), so bronchoscopy and bronchoalveolar lavage (BAL) were performed. BAL smear was negative for acid-fast bacilli, and *pneumocystis jiroveci* was not observed in special staining . On the 10th day of admission, a non-tender, mildly erythematous mass lesion on the left forearm was found during the daily visit (Figure 2). Ultrasonography of the lesion showed an abscess without any sign of bone invasion. This cold abscess's pus culture yielded non-acid fast, gram-positive filamentous bacilli.

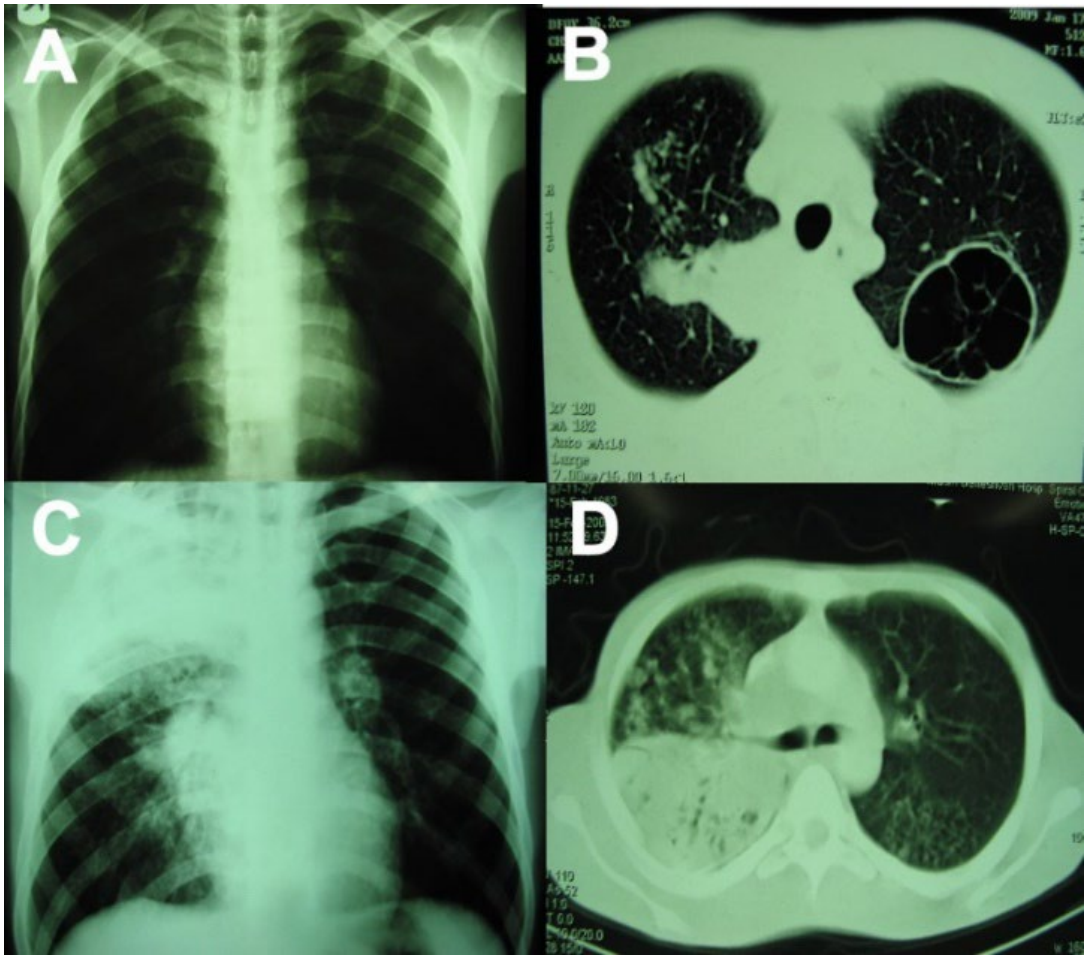

Figure 1. A: CXR on admission shows a cystic lesion in the LUL and infiltration in RUL; B: Lung CT-scan on the 2nd day of admission shows a cystic lesion in LUL and mass-like and nodular lesions in RUL; C: The CXR after ten days of empirical therapy shows worsening of RUL infiltration D: Air bronchogram and enlargement and coalescence of nodules in second lung CT-scan

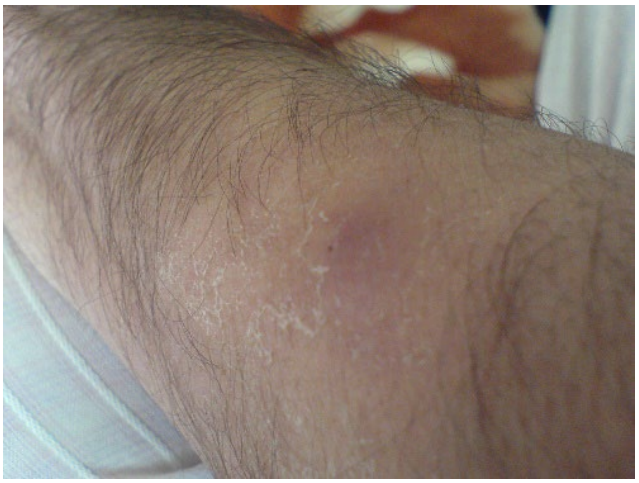

Figure 2. Non-tender, mildly erythematous mass lesion on the left forearm

Answer

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Disseminated *Actinomadura Madurae* Infection

After two weeks of incubation, the cultures of the aspirated specimen from the forearm abscess and BAL represented round white, mucoid, and molar toothed shape colonies. Then *Actinomadura madurae* was identified after differentiation procedures.

High-dose trimethoprim-sulfamethoxazole was started, and Imipenem was changed to Amikacin. The patient became afebrile, and his appetite increased after two weeks. A combination of antiretroviral drugs was initiated to control HIV infection. Amikacin was continued for two weeks. The control CXR after 12 weeks showed a clear improvement (figure 3). Trimethoprim-sulfamethoxazole was continued for six months with an excellent clinical and radiologic response (Cystic lesions in the LUL, which seemed old and unrelated to the current illness, remained unchanged). After one year of follow-up, the patient had no sign of relapse.

Actinomadura madurae is an aerobic slow-growing gram-positive filamentous bacteria inhabiting soil (1, 2). This organism has been well-known, especially in tropical and subtropical countries, for actinomycotic mycetoma (actinomycetoma), diagnosed by a triad of painless soft tissue swelling, underlying sinus tracts, and production of grains or granules. Pale grains (white to yellow) consisting of aggregations of the causative organisms within the sinus tracts are characteristic of *Actinomadura madurae* infection (3). Most of the time, the site of infection is the foot (70%). Next in frequency is the hand (12%), followed by other body areas, including the forearm, head, neck, leg, thigh, back, and rarely face and tongue (4-6). Visceral involvements like peritonitis and pneumonia have been reported as non-mycetomic presentations of *Actinomadura madurae* in patients with special conditions such as alcohol abuse, HIV, and continuous ambulatory peritoneal dialysis (1, 7, 8).

There is no information about the prevalence of actinomycosis infection in HIV-infected people. Presentation of the co-infection above is limited to case reports, with a notable predilection for cervicofacial manifestations followed by respiratory diseases, esophageal ulcerations, and perianal lesions. Actinomycosis is unlikely to cause concern among patients with HIV as an opportunistic infection due to its low prevalence (9, 10). Although a definite diagnosis is based on microbiological confirmation, we must consider the consistent history and presentation of the inflammatory lesion. (9)

Penicillin G or amoxicillin is the treatment of choice for actinomycosis (11). However, in the case of *Actinomadura madurae* infection, characterized by its chronicity and aggressive nature, the optimal treatment approach remains unclear due to its low prevalence. We have decided to treat the patient with sulfamethoxazole-trimethoprim (TMP-SMX) and amikacin, because in some reports this treatment regimen had a good response (6). Researchers have utilized several therapies, including streptomycin, diamino diphenyl sulfone (Dapsone), ciprofloxacin, ceftriaxone, rifampicin, isoniazid, and doxycycline. A combination of streptomycin, TMP-SMX, and ciprofloxacin was suggested in a study published in 2022 (12-14).

In this case, we described our experience with a patient with AIDS who revealed his symptoms as pneumonia and a mass in the forearm. The risk of rare and opportunistic infections must be carefully considered in Immunocompromised individuals. Repeated medical evaluations are necessary for them, as initial symptoms may be absent or minimal. In this

case, the patient's forearm did not exhibit any signs of a lesion at initial presentation, and during hospitalization, he remained unaware of any such development. Given the heightened susceptibility to infection in immunodeficient individuals, efficient identification and special management of the responsible pathogen is critical.

Although we could identify the causative pathogen using microbiological methods, molecular techniques may have provided more accurate results. Our study was limited by our reliance on traditional microbiological methods for pathogen identification.

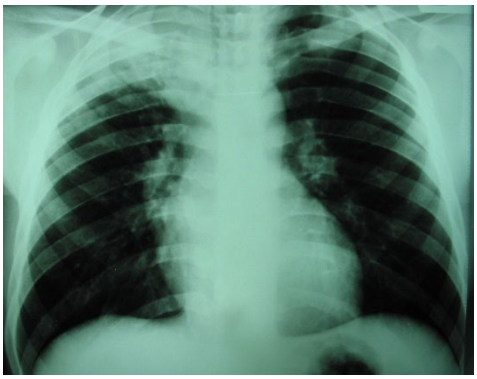

Figure 3. CXR 12 weeks after the start of the treatment shows a significant improvement

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