Clinical Quiz

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Fungal ball in a cavity

Clinical Presentation

A 50-year-old man presented with a history of hemoptysis. He has a history of pulmonary tuberculosis. Chest radiographs are available.

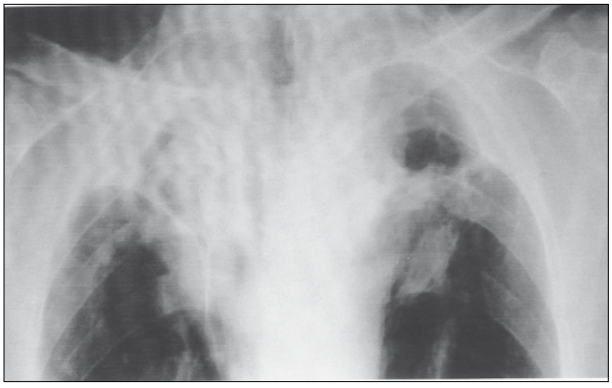

Figure 1 - Chest radiograph in a patient with a history of pulmonary tuberculosis.

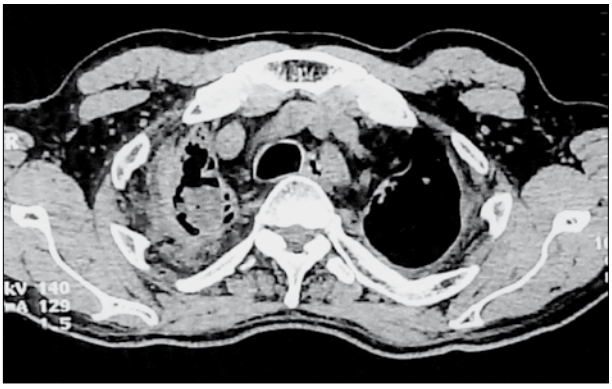

Figure 2 - Computerized tomography scan of the lung.

Questions

1. Describe the images.

2. Mention a differential diagnosis?

3. What is the likely diagnosis?

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Answers

1. The chest radiograph (**Figure 1**) shows 2 cavities, the cavity in the right apex has a well-defined opacity with a curvilinear crescent of lucency. This represents the "crescent" or "meniscus" sign, while the cavity in the left lung apex is lucent. Computerized tomography (**Figure 2**) shows a cavity, with abnormal soft tissue within, in the right lung apex with associated areas of collapse. Destruction and bronchiectatic changes in the apical, and posterior segments of the right upper lobe are seen. These findings are characteristic of a fungal ball in a cavity in the right upper lobe. The typical fibrotic changes with bronchiectasis in the adjacent parenchyma are characteristic of old tuberculosis.
2. The differential diagnosis of "crescent" or "meniscus" sign includes: Fungal ball in a cavity (aspergilloma), hematoma or debris within a cavity, early rupture of a hydatid cyst, and abscess.
3. Fungal ball in a cavity (aspergilloma); multiple sputum cultures revealed *Aspergillus hyphae*.

Discussion

Aspergilloma refers to the disease caused by a "ball" of fungal mycelia, which can occur within a cavity, usually within the parenchyma of the lung or another organ such as the kidney or brain. An aspergilloma usually arises in a preexisting cavity in the lungs. Some infections and other conditions can produce these cavities including tuberculosis, sarcoidosis, neoplasms, other fungal infections such as, histoplasmosis or coccidioidomycosis, cystic fibrosis, or invasive aspergillosis.[1-3] Less commonly, an aspergilloma can arise de novo. Chest radiography (CXR) is useful in demonstrating the presence of a mass within a cavity. Typically, there is a solid mass surrounded by a radiolucent crescent (crescent sign, Monad's sign). If the fungus ball is mobile, repeating the x-ray with the patient in the decubitus position will show that the mass has moved. Where CXR does not clearly delineate a cavity, computed tomographic (CT) scanning of the lungs can be used to demonstrate a cavity and any intra-cavitary structures. Careful evaluation of the cavity and surrounding lung will help to define whether there is more parenchymal invasion. Magnetic resonance imaging findings are particularly informative and can be used in cases in which more effective resolution of the pathology is required.[4] Diagnosis based on a CXR, is confirmed by CT and by culture or histologic identification of *Aspergillus hyphae* in sputum, lavage fluid, or transthoracic needle aspirates,[5] or by serologic demonstration of *Aspergillus precipitins*.[6] Therapeutic options are controversial. Approximately 10% resolve spontaneously.[7] When treatment is required, surgery has generally been considered to be the mainstay of therapy for aspergilloma. The main indication for medical therapy has been that the patient is not fit for surgical intervention or there is concern of concomitant tissue invasion by the fungus. The main indication for surgery is recurrent hemoptysis.

References

1. Glimp RA, Bayer AS. Pulmonary aspergilloma. Diagnostic and therapeutic considerations. ***Arch Intern Med*** 1983; 143: 303-308.
2. Tomlinson JR, Sahn SA. Aspergilloma in sarcoid and tuberculosis. ***Chest*** 1987; 92: 505-508.
3. Tierney P, Thomas M, Samuel D, Patel KS, Stafford N. Recurrent aspergilloma of the frontoethmoid sinus in a non-immunocompromised patient. ***J R Soc Med*** 1996; 89: 165-166.
4. Fujimoto K, Meno S, Nishimura H, Hayabuch N, Hayashi A. Aspergilloma within cavitary lung cancer: MR imaging findings. ***AJR Am J Roentgenol*** 1994; 163: 565-567.
5. Stanley M, Deike M, Knoedler J, Iber C. Pulmonary mycetomas in immunocompetent patients: diagnosis by fine-needle aspiration. ***Diagn Cytopathol*** 1992; 8: 577-579.
6. Addrizzo-Harris DJ, Harkin T, McGuinness G, Naidich DP, Rom WN. Pulmonary aspergilloma and AIDS. A comparison of HIV-infected and HIV-negative individuals. ***Chest*** 1997; 111: 612-618.
7. Hammerman KJ, Christianson CS, Huntington I, Hurst GA, Zelman M, Tosh FE. Spontaneous lysis of aspergillomata. ***Chest*** 1973; 64: 697-699.