

Motility of Pulmonary Fungus Ball Shown with Thoracic Computed Tomography on Prone Position

Atilla G. ATICI, MD.¹, Serhat FINDIK, MD.¹, Ahmet BAŞOĞLU, MD.²,
M. Levent ERKAN, MD.¹,

*Öndokuz Mayıs University, Medical School, Department of Chest Disease¹, and
Department of Thoracic Surgery², SAMSUN*

- ✓ A chest X-ray taken of a 42-year old male, who was admitted for hemoptysis, revealed a solid round mass partially surrounded by a radiolucent crescent within a cavity at right apex consistent with fungus ball. In order to reveal whether the opacity was mobile, the pathognomonic feature of fungus ball, or not, we performed thoracic computed tomography (CT) on supine and prone positions successively and demonstrated its motility.
Key words: *Fungus ball, prone, thoracic computed tomography, motility*

✓ **Pron Pozisyonunda Çekilen Toraks Bilgisayarlı Tomografisi ile Pulmoner Mantar Topunun Hareketliliğinin Gösterilmesi**

Hemoptizi nedeniyle başvuran 42 yaşındaki erkek hastanın çekilen akciğer grafisinde sağ apekte kavite ve bu kavitenin içinde mantar topunu düşündüren hilal şeklinde hava gölgesi ile çevrili yuvarlak opasite dikkati çekti. Mantar topunun patognomonik özelliği olan hareketliliğini gösterebilmek amacıyla ardışık olarak supin ve pron pozisyonlarda toraks bilgisayarlı tomografi kesitleri alındı. Sonuçta opasitenin hareketi görülerek mantar topu tanısı kondu.

Anahtar kelimeler: *Mantar topu, pron, toraks bilgisayarlı tomografi, hareketlilik*

INTRODUCTION

Fungus ball (mycetoma) can be defined as a conglomeration within a pulmonary cavity or ectatic bronchus of fungal hyphae with fibrin, mucus, and cellular debris. Etiologically, the majority of mycetomas are caused by *Aspergillus* species, termed as aspergilloma. Mostly, the diagnosis of fungus ball is based on the characteristic findings both on chest-x-ray and thoracic computed tomography (thorax CT).

CASE

A 42-year-old male was admitted for productive cough and hemoptysis of four

months duration. He denied dyspnea, chest pain, and constitutional symptoms. His past history was significant for pulmonary tuberculosis 19 years previously and was treated with antituberculous drugs for a year. He had been ex-smoker for 8 years. Physical examination was normal. Laboratory findings from hemograms including peripheral blood smear, biochemistry tests, and urinalysis were normal. The erythrocyte sedimentation rate was 8 mm/hr, and ppd was 9 mm at 72 hours. The chest-X-ray, both PA (posteroanterior) and lateral, and thorax CT revealed a solid round mass within a cavity

partially surrounded by a radiolucent crescent (Monod's sign) at the right apex and also there was pleural thickening (figure 1, 2, and 3). Movement of the mass within

cavity was demonstrated by comparing supine and prone thorax CT (figure 4). Sputum AFB smears and cultures for tuberculosis and fungi were negative. We

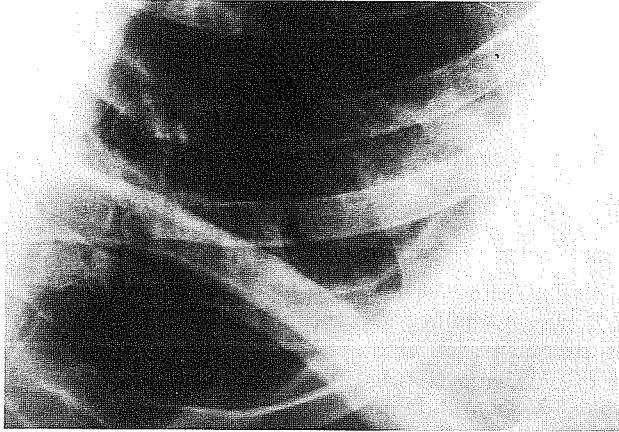


Figure 1. Postero-anterior chest x-ray revealed a solid round opacity within a cavity partially surrounded by a radiolucent crescent (Monod's sign) at the right apex.

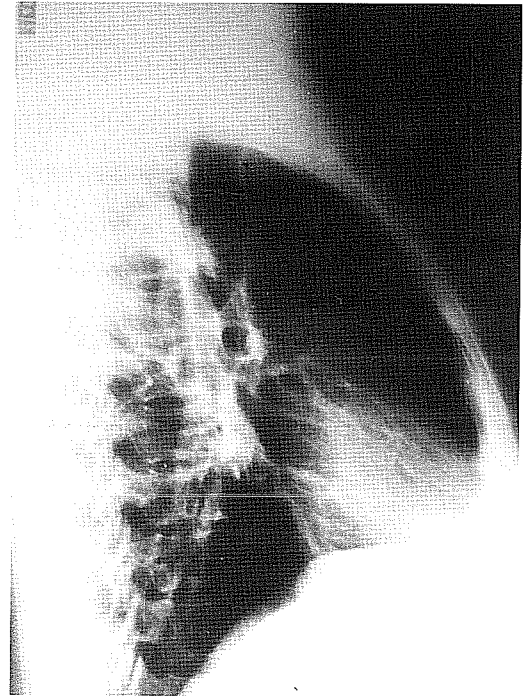


Figure 2. Lateral chest x-ray showed a round opacity within a cavity surrounded by a radiolucent crescent.



Figure 3. Thorax CT revealed a solid round mass within a cavity that is situated at the apical segment of right upper lobe and also pleural thickening.

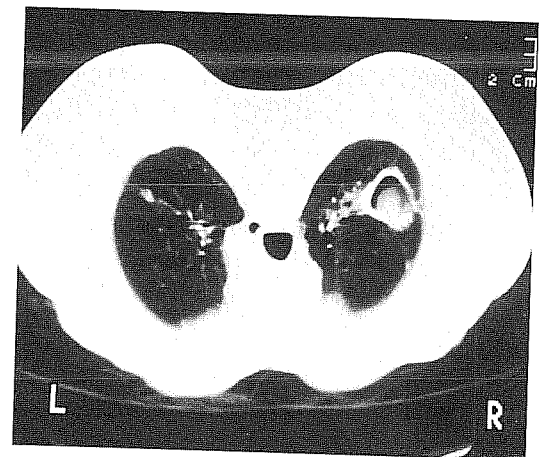


Figure 4. Movement of the mass within cavity was clearly demonstrated by thorax CT taken on prone position.

could not measure serum precipitating antibodies due to a technical problem. Skin test for aspergillus were negative. Fiberoptic bronchoscopy was revealed hyperemic and edematous mucosa of apical division of right upper lobe (RUL) and the results of pathological and microbiologic examinations of both bronchial lavage and mucosal biopsies from apical segment of RUL were negative for both tuberculosis and fungi, and also for malignancy. The patient subsequently underwent open thoracotomy and was done right upper lobectomy. The result of pathologic examination of lobectomy material was consistent to fungus ball and the culture result was *Aspergillus fumigatus*. Three months after surgery the patient was perfectly well.

DISCUSSION

The most common and the most characteristic feature of aspergillosis is colonization of previously formed cavities in the lung. *Aspergillus* growing in preformed cavities produces a characteristic lesion, the intracavitary fungus ball, or aspergilloma. Patients are usually nonatopic, and have chronic underlying lung diseases that include tuberculosis, advanced sarcoidosis, bronchiectasis, interstitial fibrosis, ankylosing spondylitis, or emphysema⁽¹⁾. The most common primary lung disease that predisposes to aspergilloma is open healed tuberculous cavity, and the interval between diagnosis of tuberculosis and development of aspergilloma varies between 1-30 years. Our patient had a history of tuberculosis 19 years ago.

The most common symptom is hemoptysis, as in the patient, and about 75 - 90 % of the patients have hemoptysis, mostly minor hemorrhages, but one quarter of

patients may experience massive hemoptysis.

Diagnosis of aspergilloma, as in our patient, is based on the characteristic radiographic findings of a moveable, homogenous opacity, that is usually surrounded by a halo or an air-crescent (Monod's sign), inside a cavity usually in upper lobes. Adjacent pleura is often thickened and that may precede the development of fungus ball by years.

The most distinguishing feature of mycetoma is its motility that was usually demonstrated by chest X ray and/or thoracic CT scans taken in both the erect and decubitus or the supine and lateral decubitus positions⁽²⁻⁷⁾. We thought that the movement of the fungus ball, under the effect of gravity, could be easily detected by thoracic CT, if it is performed on supine and prone positions successively. And we performed it and detected easily that the fungus ball moved to the most dependent position within the pulmonary cavity under the effect of gravity upon change in the patients' positions.

In conclusion, in suspicion of fungus ball, in order to detect mobility of a homogenous opacity within a pulmonary cavity we suggest to perform thoracic CT scan on supine and prone positions successively.

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Yazışma adresi:

Dr.Atilla G. ATICI

Ondokuz Mayıs Üniversitesi, Tıp Fakültesi,

Göğüs Hastalıkları Anabilim Dalı

55139 Kurupelit, SAMSUN

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