

AMSUS CASE OF THE MONTH

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Asthmatic Woman With Shortness of Breath

Hugh M Dainer, MD[‡]; Steve Kao, MD*[†]; David S. Feigin, MD[‡][§]*

History and Chief Complaint: 48-year-old asthmatic woman who presents with “congestion” and shortness of breath.

Physical Examination: Diffuse wheezing—especially on the right.

Laboratory: Serum Immunoglobulin E (IgE) = 1,731. Prior IgE level = 4,329.



Fig. 1.



Fig. 2.

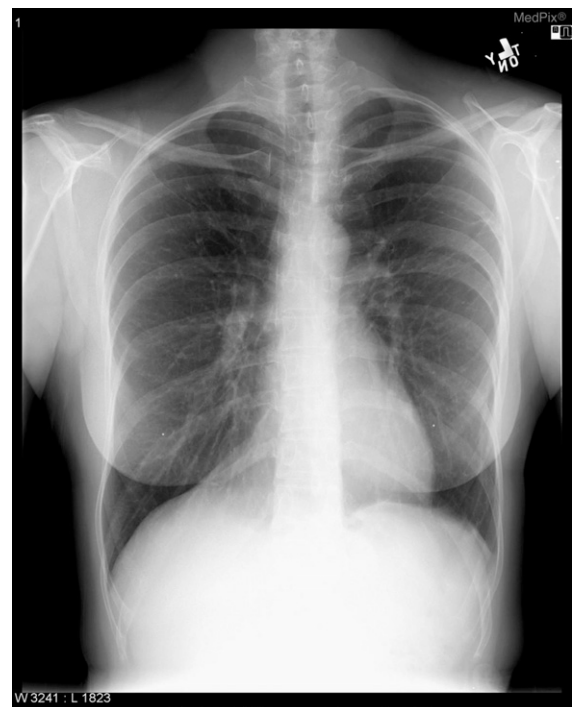


Fig. 3.

*Walter Reed National Military Medical Center, 8901 Rockville Pike, Bethesda, MD 20889.

[†]Tripler Army Medical Center, 308 Jarrett White Road, Honolulu, HI 96819.

[‡]Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD 20814.

[§]Johns Hopkins University, 401 North Caroline Street, Baltimore, MD 21231.

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For the answer, please see the next page.

FIGURE 1. Pulmonary artery (PA) chest radiograph. The finger-like cylindrical opacities, in a bronchial distribution in the right upper lobe and right middle lobe, are the “finger-in-glove” of allergic bronchopulmonary aspergillosis (ABPA). The mild pectus excavatum shifts and rotates the heart—making the left heart border (main PA) look “prominent.” The tiny metallic opacities are on beads on her nipples.

FIGURE 2. Axial chest computed tomography (CT). Soft tissue windows demonstrate the “finger-in-glove” cylindrical opacity in the right upper lobe. This examination was performed on the same date as the first chest radiograph (Fig. 1). Very mild pectus excavatum.

FIGURE 3. PA chest radiograph. Follow-up image shows resolution of the cylindrical opacities and bronchial obstruction. There is persistent right upper lobe bronchial wall thickening (bronchitis) and dilatation (bronchiectasis). The tiny metallic opacities are beads on her nipples.

Findings: There is a slight pectus excavatum of the anterior chest wall, which makes the left heart border look “prominent” because the pulmonary outflow (main PA) is rotated and more lateral than normal. When symptomatic, and on prior imaging (“old films”), she demonstrates right upper lobe and right middle lobe “finger-in-glove” opacities. These were seen on both plain radiographs and on the axial CT imaging. Four months later, on her follow-up PA radiograph, there is remarkable resolution of the cylindrical opacities; and, now more visible is right upper lobe bronchial wall thickening and bronchiectasis.

Differential Diagnosis:

- Chest wall—pectus excavatum pulmonary opacities
- Tuberculosis—Churg-Strauss syndrome—eosinophilic pneumonia
- ABPA
- Other infectious pneumonia (bacterial, viral, and fungal)

Diagnosis: Allergic Bronchopulmonary Aspergillosis (ABPA), confirmed by bronchoscopy and laboratory tests (IgE).

Treatment and Follow-up: Bronchoscopy culture of collected sputum ruled out tuberculosis and other infectious etiologies. High IgE levels (now resolving) demonstrates allergic nature of condition. The patient received a course of oral corticosteroids and antifungal medication between the 2 chest radiograph images. Because of bronchiectasis, she is predisposed to future recurrences, which will be treated with new rounds of steroids and antifungals when they occur. On her follow-up visit, all of her lung opacities had resolved—revealing bronchial thickening and dilatation.

Discussion: Hypersensitivity reactions to *Aspergillus* organism can take three forms. The first is granulomatous inflammation of the distal airways and pulmonary parenchyma, proba-

bly related to inhalation of spores and considered to be a form of alveolar hypersensitivity. The second form is asthma. The third and most common form is a condition characterized by long-standing asthma, eosinophilia, mucoid impaction of segmental bronchi, and serologic evidence of sensitization to *Aspergillus* organism. This complex condition is known as ABPA. In ABPA, the fungus resides and proliferates in the patient’s airways, producing a continual supply of fresh antigen that is responsible for precipitating antibodies, an immediate and often delayed type hypersensitivity, the production of IgE, and both bronchial and blood eosinophilia. In most cases, the mucus plugging occurs in one or more orders of bronchi distal to a lobar bronchus, with resultant dilatation and severe distortion.

Pathologically, segmental and proximal subsegmental airways are dilated and filled with thick inspissated mucus. Surrounding parenchyma may show variable degrees of consolidation. Microscopically, the intraluminal material consists of mucus admixed with cellular debris, eosinophils, and fungal hyphae (seen with silver stain). Bronchial walls are inflamed and infiltrated with inflammatory cells including eosinophils and surrounding parenchyma shows eosinophilic pneumonia. In suspected cases of ABPA, expectorated mucus plugs or intraluminal material removed by bronchoscopy should always be examined histologically as a diagnosis can be confirmed by identifying fungal hyphae. The roentgenographic pattern of mucus plugs demonstrates homogeneous finger-like shadows in a precise bronchial distribution, usually involving the upper lobes and almost always in the more central segmental bronchi. These bifurcating opacities have been classically described as “gloved-finger,” inverted Y or V, or “cluster-of-grapes” appearance.

SUGGESTED READINGS

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