Who is the Owner of this Glove?

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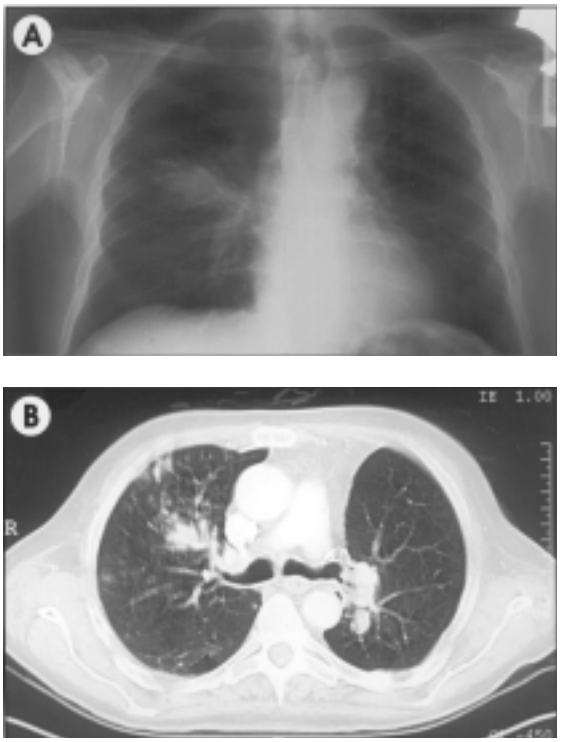
Pulmonary aspergillosis is characterized by a spectrum of radiographic and clinical findings that are determined by the status of the immune system or the presence of underlying structural lung diseases. Four forms of PA are known: aspergilloma in patients with existing lung cavities, chronic necrotizing aspergillosis in those who are mildly immunocompromised or have chronic lung disease, invasive pulmonary aspergillosis seen in severely immunocompromised patients, and allergic bronchopulmonary aspergillosis that mainly affects patients with bronchial asthma [1]. ABPA is a hypersensitivity reaction to Aspergillus antigens (mostly due to *Aspergillus fumigatus*), suspected on clinical grounds and confirmed by radiologic, laboratory and pathologic findings [1]. We present the case of an asthmatic patient with ABPA.

Patient Description

The patient was a 63 year old man with hypertension, type 2 diabetes mellitus and asthma. Being a heavy smoker for many years he developed chronic obstructive pulmonary disease. This diagnosis was supported by pulmonary function tests. The patient was admitted with a 2 month history of anorexia, headache, wheezing and progressive dyspnea, associated with cough producing brown sputum. Two years previously, left lung upper lobe resection was performed due to a space-occupying lesion. Pathologic examination demonstrated numerous ectatic bronchi with thickened mucous, prominent bronchitis, peribronchitis and a peribronchial chronic interstitial pneumonia. *Aspergillus hyphae* and abundant eosinophils were present within the mucous. Amphotericin was administered for 10 days followed by itraconazole for 3 weeks.

On the present admission he was afebrile and his respiratory rate was 24/minute. Digital clubbing was observ-ed. Chest auscultation revealed a prolonged expiratory phase and diffuse rhonchi. White blood cell count was 9,800 cells/mm^3, of which 23% (2,346 cells/mm^3) were eosinophils. Chest X-ray revealed an oval opacity emanating from the right hilum with rounded distal margins appearing as "gloved fingers" [Figure A]. Chest computed tomography scan demonstrated central bronchiectasis and alveolar opacities in the upper and middle lobes of the right lung [Figure B]. Pulmonary function tests showed a pattern of moderate obstruction with forced expiratory volume in 1 second 56% of predicted. Skin tests for Aspergillus and histamin were positive (5 mm and 3 mm, respectively). The diagnosis of ABPA was confirmed by bronchoscopic examination, which revealed mucous gelatinous plugging causing partial obstruction, containing microscopically visible *Aspergillus hypae* with no histologic evidence of tissue invasion. The patient was treated with oral prednisone 40 mg/day that was tapered gradually, and itraconazole 400 mg/day for 16 weeks, resulting in a significant clinical response and resolution of the pulmonary infiltrates.



[A] Chest X-ray shows an oval opacity with a "gloved fingers" appearance in the right lung, adjacent to the right hilum. **[B]** CT of the lungs shows dense round opacifications compatible with mucous within dilated central bronchi in the right upper lobe.

Comment

The diagnosis of ABPA is classically based on the following eight criteria: asthma, immediate skin reactivity to Aspergillus, serum precipitin to *Aspergillus fumigatus*,

PA = pulmonary aspergillosis
ABPA = allergic bronchopulmonary aspergillosis

increased serum immunoglobulins E and G to *Aspergillus fumigatus*, total serum IgE >1,000 ng/ml, current or previous pulmonary infiltrates, central bronchiectasis, and peripheral eosinophilia >1,000 cells/μl [1]. However, the entire profile is not required for establishing the diagnosis [1].

In a symptomatic patient with a previous history of asthma, the radiologic finding of "gloved fingers" is highly suggestive of ABPA. The "gloved fingers" reflect inflammation, thickening and dilatation of the bronchial tree with mucoid impaction within the airways [2]. Pulmonary alveolar opacities on CT scan represent a deposit of immune complexes and inflammatory cells (including eosinophils) within the lung parenchyma [3]. At a later stage, inflammation may lead to the development of bronchiectasis and pulmonary fibrosis [1]. Bronchiectasis is typically central in location and involves the proximal airways. CT scanning is the preferred method for demonstrating these findings. The basic treatment consists of oral prednisone 0.5 mg/kg/day for 2 weeks, with gradual tapering according to the patient's clinical condition. In order to prevent steroid-induced side effects, including invasive aspergillosis, the addition of itraconazole 200 mg bid for 16 weeks was recently recommended. This enables reduction in both steroid dosage and duration of therapy [1].

In conclusion, the finding of "gloved fingers" on chest X-ray in an asthmatic patient is highly suggestive of ABPA. Early diagnosis and treatment are essential and may prevent serious irreversible pulmonary structural changes.

References

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