

Allergic Bronchopulmonary Aspergillosis: Learning from a Missed Diagnosis



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Introduction

- ABPA = hypersensitivity response to airway colonization with *Aspergillus fumigatus* in patients with asthma or CF (2% and 15% incidence, respectively)
- Signs/symptoms: fever, thick mucus production, hemoptysis, and wheezing

Case Presentation

- 27yo man with history of childhood asthma
- Presented to the ED with cough and dyspnea -> treated for bacterial pneumonia and started on a daily steroid inhaler
- Wheezing, dyspnea returned 3 weeks later
 - Leukocytosis with eosinophilia (1680 cells/ μ L)
 - Chest CT showed bilateral peribronchovascular ground glass and consolidative opacities
- Negative: HIV, serum *Aspergillus* galactomannan, urine *Streptococcus pneumoniae* and *Legionella* antigens
- Again, treated for bacterial pneumonia, complicated by asthma exacerbation, with antibiotics and prednisone taper
- PCP follow up 1 week later
 - Having ongoing symptoms
 - Sputum culture had resulted with *Aspergillus* species
 - Significantly elevated total IgE (3719 μ g/mL, reference <214 μ g/mL) and *Aspergillus fumigatus*-specific IgE (97.3 μ g/mL, reference <0.34 μ g/mL)
- He was diagnosed with ABPA, treated with oral corticosteroids and itraconazole, and referred to pulmonology

Discussion

- *Aspergillus*-responsive T helper cells generate cytokines (IL 4/5/13) with resultant IgG- and IgE-mediated responses
- Treatment: corticosteroids +/- antifungals, especially in severe or recurrent cases, and in the setting of immunosuppression
- Untreated, ABPA can lead to structural changes including bronchiectasis, fibrosis, and cavitary lung disease
- Treatment monitoring includes clinical and radiographic improvement and a reduction in serum total IgE

ABPA is a hypersensitivity reaction, not a mucosal fungal invasion. Suspect ABPA when patients with asthma or CF experience severe, recurrent symptoms not responsive to standard treatment.



Rosenberg Criteria for ABPA

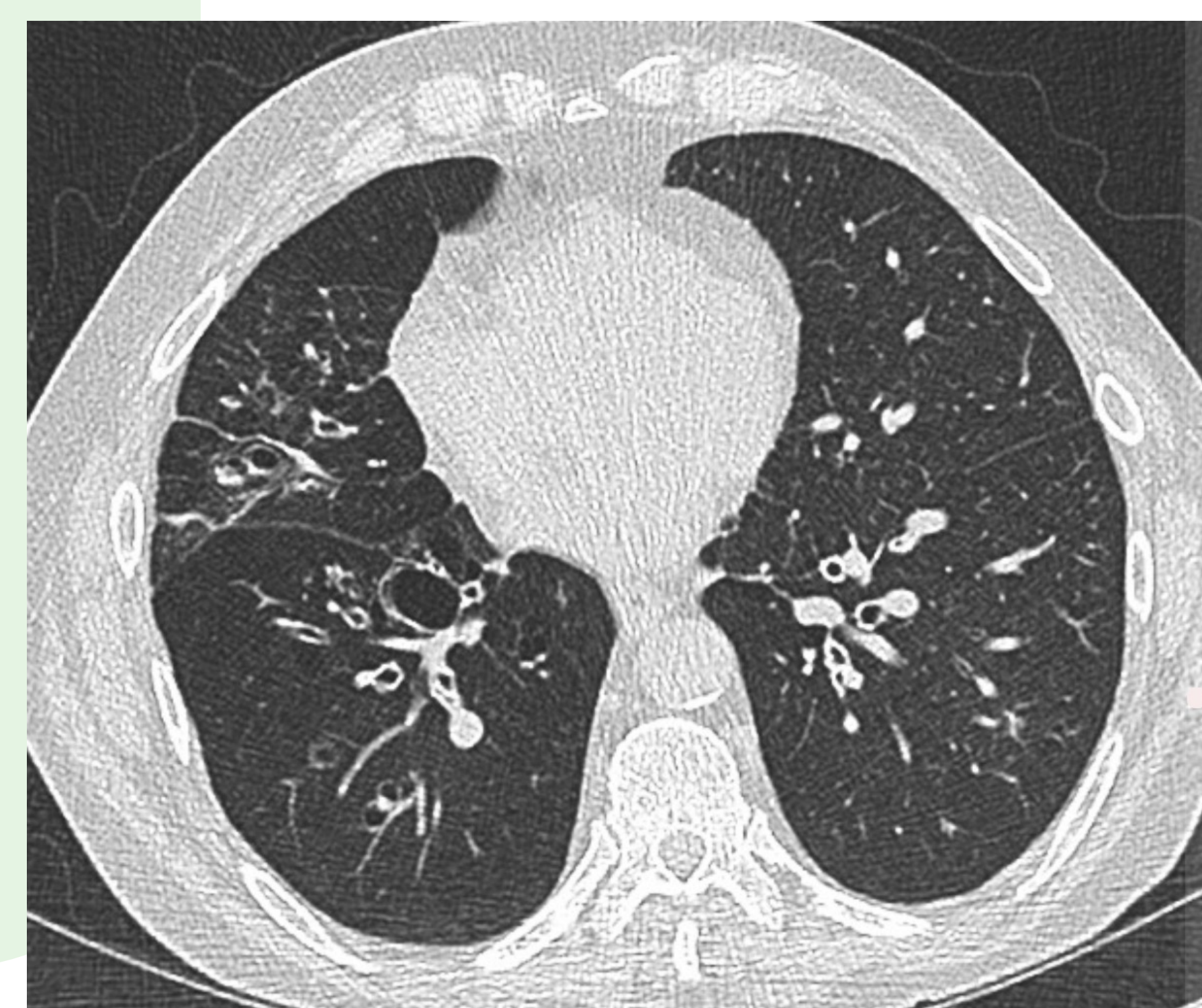
Asthma or Cystic Fibrosis
+
Aspergillus-specific IgE or Skin Testing+
+
Elevated total IgE
+
2+ Minor Criteria

Elevated *Aspergillus fumigatus* IgG

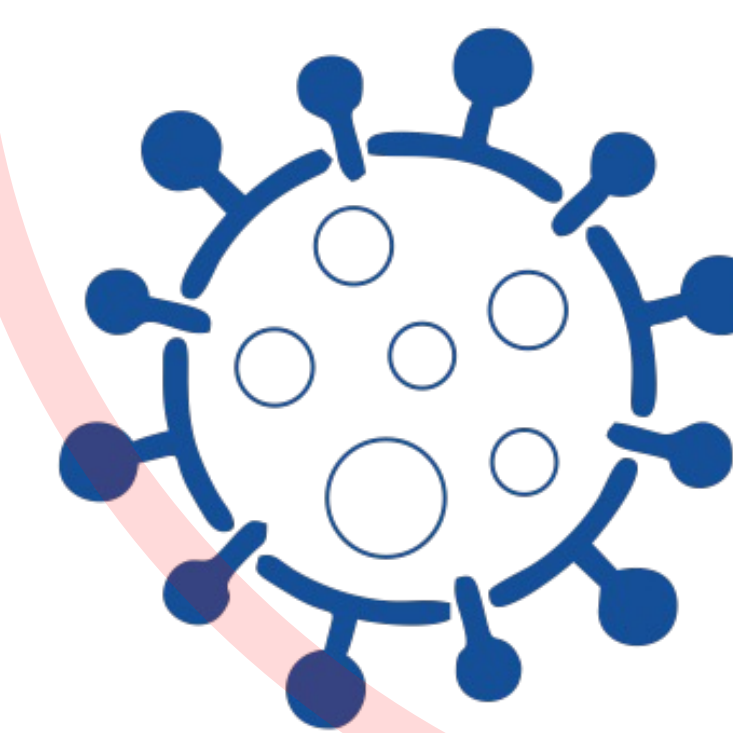
>500 eosinophils/ μ L

Radiographic findings of ABPA, ex:

- Centrilobular nodular opacities
- Bronchiectasis
- Mucoid impaction



Sputum culture:
Low sensitivity,
Aspergillus is cultured in sputum of only 2/3 people with ABPA



Serum galactomannan antigen: **Low sensitivity/specificity** (25.7%/82%)

References

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Ricketti, A., Greenberger, P., & Patterson, R. (1984). Serum IgE as an important aid in management of allergic bronchopulmonary aspergillosis. *Journal of Allergy and Clinical Immunology*, 74(1), 68-71.