

CASE REPORT

Late-onset allergic bronchopulmonary aspergillosis (ABPA)

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Learning points for clinicians

Allergic bronchopulmonary aspergillosis could present atypically, and the diagnosis should always be sought in patients with asthma. Prompt diagnosis and early treatment with systemic steroids might lead to dramatic recovery and prevent possible complications.

Case presentation

An 81-year-old man with a history of late-onset asthma admitted with progressive shortness of breath in the last 2 years. His GP diagnosed him with asthma almost 30 years ago. He usually has an average of two exacerbations every year, but it has doubled over the last 2 years. He uses fluticasone/salmeterol (500/50) inhaler, short-acting beta agonist inhaler and a Leukotriene receptor antagonist once daily tablet. His other medications include aspirin and a statin. He has a history of ischaemic heart disease with a stent *in situ*. His latest Echocardiogram showed normal left ventricular function and a moderately thickened aortic valve with no significant gradient across the valve. The patient had no significant travel or smoking history.

On examination, patient oxygen saturation was 94% on room air. There was no clubbing or any sign of connective tissue diseases peripherally. There were no abnormal signs elicited in chest exam except for end-expiratory wheeze bilaterally on auscultation. There were no murmurs heard or signs of heart failure.

The patient full blood count showed a white cell of 7800 cells·µl⁻¹ with significant eosinophilia reaching 2100 cells·µl⁻¹ (27%). Normocytic normochromic anaemia (Hb 10.5 g/dl) was also noted. Patient's C-reactive protein was 2.75 mg/l and his renal and liver function figures were within range. Chest X-ray

showed only right lower lobe consolidation that was also seen in patient's CT scan in addition to a widespread tree in bud changes (Figures 1 and 2) and central bronchiectasis (Figure 1).

His *Aspergillus fumigatus* skin prick test was negative; intra-dermal testing was not done. Day bronchoscopy showed mucus plugging with no endobronchial lesions. Lavage from bronchoscopy showed background eosinophilia on cytology. Microbiology revealed commensals with no acid-fast bacilli. The patient was discharged on 20 mg (0.25 mg/kg) tapering dose of oral steroids.

Further results showed an IgE level of 868 IU/ml (2083 ng/ml), specific *A. fumigatus* IgE 15.9 IU/ml. Other test like ANCA antibodies, ANA antibodies, other immunoglobulins levels and alpha 1 antitrypsin level all came back negative. We made a diagnosis of allergic bronchopulmonary aspergillosis (ABPA) based on international society for human and animal mycology (ISHAM) criteria.

We reviewed the patient after a month and noted a significant improvement in his symptoms and repeated tests. His eosinophils count was 200 cells·µl⁻¹ and IgE levels was 619 IU/ml (1485 ng/ml). We planned to stop the steroids over 6 weeks and consider antifungal therapy if he relapsed.

Discussion

ABPA is a complex hypersensitivity reaction towards *A. fumigatus*. It has a predilection toward asthma patients,¹ but uncommon in an older population. The mean age of onset in a Japanese population was 57 years,² while it was 36, 41, 36 and 47 in North India, China, Serbia and the UK, respectively.^{3–6}

The composite findings of asthma, blood eosinophilia, elevated total IgE level and central bronchiectasis on HRCT favoured ABPA, but the diagnosis required criteria that was described first by Rosenberg-Patterson in 1978.⁷ These have

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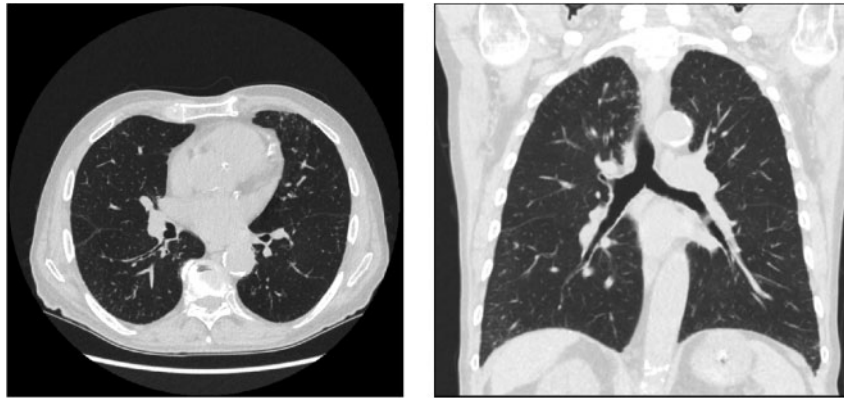


Figure 1. Patient's high-resolution CT showing central bronchiectasis in axial and coronal sections.



Figure 2. Patient's high-resolution CT (Lung bases).

evolved and modified first by Greenberger¹ and recently by the ISHAM.⁸ Greenberger's¹ criteria are: (i) presence of asthma, (ii) immediate cutaneous reaction to *A. fumigatus*, (iii) serum IgE >1000 ng/ml (417 IU/ml), (iv) elevated specific IgE-IgG to *A. fumigatus* and (v) CT scan showing central bronchiectasis. ISHAM criteria⁹ required cystic fibrosis or asthma as a pre-disposing condition and two obligatory criteria: (i) either immediate cutaneous hypersensitivity to *Aspergillus* antigen or an elevated IgE levels against *A. fumigatus* and (ii) IgE levels >1000 IU/ml. Besides, two out of three criteria should be present: (i) IgG antibodies against *A. fumigatus* in serum, (ii) radiographic pulmonary opacities consistent with ABPA and (iii) an eosinophil count >500 cells/ μ l in steroid-naïve patients.

The patient's negative skin prick test for *A. fumigatus* played a role against ABPA diagnosis. Apart from its high sensitivity,⁹ it is essential for Greenberger's criteria.¹ Nevertheless, the patient's elevated specific *A. fumigatus* IgE was enough to meet ISHAM's first condition.⁸ The total IgE level was 869 IU/ml, below the cut-off point set by ISHAM experts; however, they accept a lower level if the other criteria were met.⁸ The atypically lower IgE level might be due to patient's late-onset asthma² or a

marker of remission.¹⁰ The patient's admission chest X-ray, eosinophil count and positive IgG precipitants covered all ISHAM's non-essential criteria. Scadding et al.¹¹ considered central bronchiectasis in CT scan pathognomonic for ABPA,⁸ but it is considered a complication and not an ISHAM's diagnostic criterion.⁸ The lack of systemic symptoms, other organs involvement and vasculitis antibodies made Chronic eosinophilic pneumonia, Churg-Strauss syndrome and hyper-eosinophilic syndrome diagnosis unlikely.¹²

Early systemic steroids are the main stay of therapy for ABPA.¹³ The most advocated steroid protocol is prednisolone 0.5 mg/kg/day for the first 2 weeks followed by 0.5 mg/kg/day on alternate days for the next 2 months.¹³ Our patient had 0.25 mg of prednisolone as initial therapy, albeit he showed improvement both subjectively and in his blood tests. Antifungal treatment was shown to reduce exacerbations and inflammation¹⁴ without toxicity.¹⁵ However, there is still no large randomized control trial to prove its effectiveness.

Conflict of interest: None declared.

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