

Dear Editor

Allergic Bronchopulmonary Aspergillosis Mimicking Relapsing Chronic Eosinophilic Pneumonia in Non-Asthma Patient

ABPA is a complex clinical entity that results from an allergic immune response to *Aspergillus* species, and most often occurs in patients with asthma.¹ It is rarely seen in patients without asthma.^{2,3} There are no established tests to confirm a diagnosis of ABPA. Its diagnosis is commonly established based on clinical, radiologic and immunologic criteria.^{4,5}

A 31-year-old woman was referred to us from a local clinic for further evaluation and management of a one-month-history of productive cough. The patient had been diagnosed with chronic eosinophilic pneumonia (CEP) at our hospital about three years before based on clinical findings such as elevated serum IgE (512 IU/mL), peripheral eosinophil counts (1,725/mm³) and consolidation with peripheral ground-glass opacities in the left lower lobe on chest X-ray (Fig. 1A) and computed tomography (CT) scans (Fig. 1B). A percutaneous needle aspiration biopsy (PCNAB) at the site of the consolidation also showed severe eosinophilic inflammation (Fig. 1C). These clinical findings were suggestive of CEP. The patient was treated with systemic steroid for two months and had follow-up loss after achieving an improvement of symptoms. Moreover, the patient had no history of allergy and acute asthma attack. On admission, the patient complained of productive cough with pleuritic chest pain, hoarseness, and sore throat. On physical examination, the patient had postnasal drip with cobble stone appearance on oropharynx and coarse breathing sound with crackles in both lower lung fields, but had no wheezing.

On laboratory tests, the patient had hemoglobin of 13.0 g/dL, white blood cell counts 17,300/mm³ with 38.8% neutrophils, 13.8% lymphocytes, 41.9% eosinophils, and 5.2% monocytes. In addition peripheral eosinophil counts were 6,800/mm³. On serum biochemistry, the patient had normal liver, kidney and electrolyte profile. Arterial blood gas analysis (ABGA) on room air showed pH of 7.41, PaO₂ of 63 mmHg, PaCO₂ of 34 mmHg, HCO₃⁻ of 21.6 mEq/L, and SaO₂ of 92%. Serum IgE levels were highly increased (2,576 IU/mL). On further evaluation, we performed IgE multiple allergosorbent assay (MAST) for major inhalants. Despite a higher titer of IgE, however, there were no specific allergens. *Aspergillus* IgG antibody was equivocal (10 U/mL). Pulmonary function test was normal, showing a forced vital capacity (FVC) of 3.04 L (82% of predicted value), forced expiratory volume in 1 sec (FEV₁) of 2.86 L (96% of predicted value), and an FEV₁/FVC of 94%. In

addition, the methacholine challenge test was negative. On chest radiography, the patient had the consolidation of both lower lobes and the right middle lobe (Fig. 2A). As compared with three years ago, there was a change in chest radiography (Fig. 1A). On chest CT scans the patient had consolidations, mild central bronchiectasis and surrounding ground-glass opacities in the left lower lobe and the right middle and lower ones (Fig. 2B) which was not seen previously (Fig. 1B). One study showed that unless recognized and appropriately treated, ABPA may cause significant irreversible changes in the pulmonary functions, including bronchiectasis, could otherwise be prevented or attenuated so long as they recognized and treated as the earliest as possible.^{6,7} Our case also showed bronchiectatic changes. Clinicians should also consider the possibility of developing other eosinophilic disorders in patient who unexpectedly had a relapse or require higher doses of glucocorticoids to maintain control.⁸ We, therefore assumed that we could not make an early diagnosis of ABPA because we considered bronchial asthma as one of the diagnostic criteria for ABPA. In addition, we also assumed that CEP had progressed to ABPA in the patient working in a dusty environment as the time elapsed. Actually, there is a possibility that the patient might have inhaled *Aspergillus* antigen. Moreover, the patient had maxillary sinusitis on paranasal radiography, which suggests that the patient might have been exposed to allergens. In addition, a bronchoscopy was performed to evaluate endobronchial lesion. This showed that many whitish to yellowish nodules with tenacious secretions were mainly present at the sites where the right upper bronchus originates and the right mediobasal segmental bronchus. Furthermore, the bronchial washing and biopsy was performed at the sites where the right mediobasal segmental bronchus originates. A transbronchial lung biopsy (TBLB) was also done in the laterobasal segment of the left lower lobe. No malignant cells were observed on washing cytology. Moreover, respiratory viral polymerase chain reactions and bacterial culture tests were negative. On TBLB at the left lower lobe, there were some eosinophilic infiltrations. Besides, on bronchoscopic biopsy at the right lower lobe, there were reactive hyperplasias of the bronchial epithelium accompanied by many branching fungal hyphae. These findings were suggestive of *Aspergillus* species accompanied by eosinophilic infiltration (Fig. 2C). To sum it up, our patient had no asthma, but elevated peripheral eosinophil count, higher total IgE, equivocal *A. fumigatus* specific IgG, biopsy finding, and central bronchiectasis on chest CT. Immediate cutaneous hyperreactivity to *Aspergillus* Ag could not be checked. However, even not fulfill the diagnostic criteria for ABPA, we could diagnose it clinically through above findings. To manage

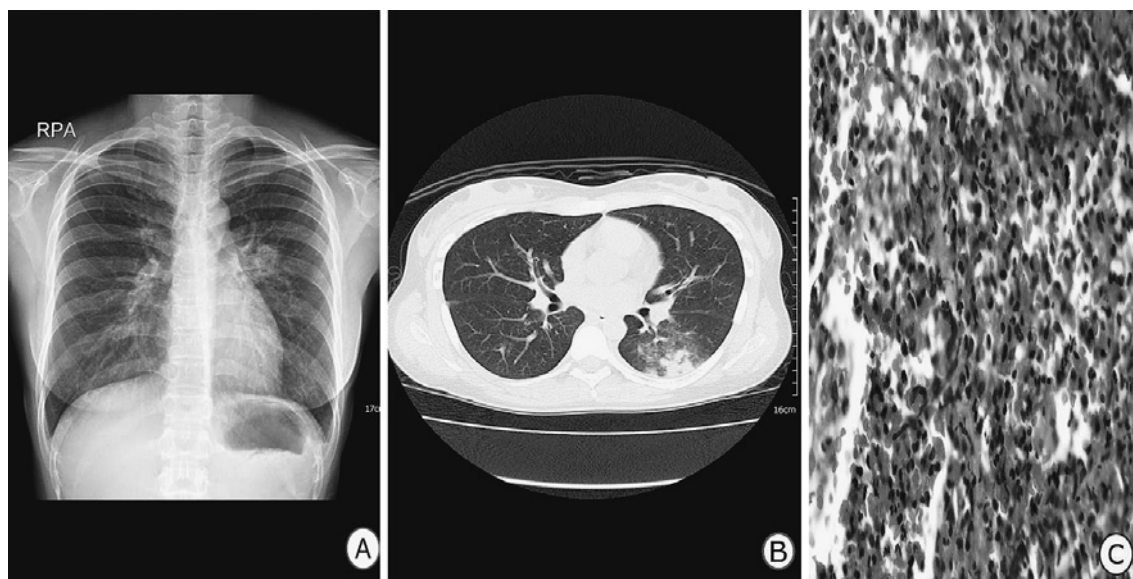


Fig. 1 **A:** Chest X-ray showed the left perihilar oval shaped consolidation. **B:** Chest computed tomography showed consolidation of the left lower lobe accompanied by surrounding ground-glass opacity. **C:** A percutaneous needle aspiration biopsy at the site of the consolidation showing severe eosinophilic infiltrations (H&E stain, $\times 400$).

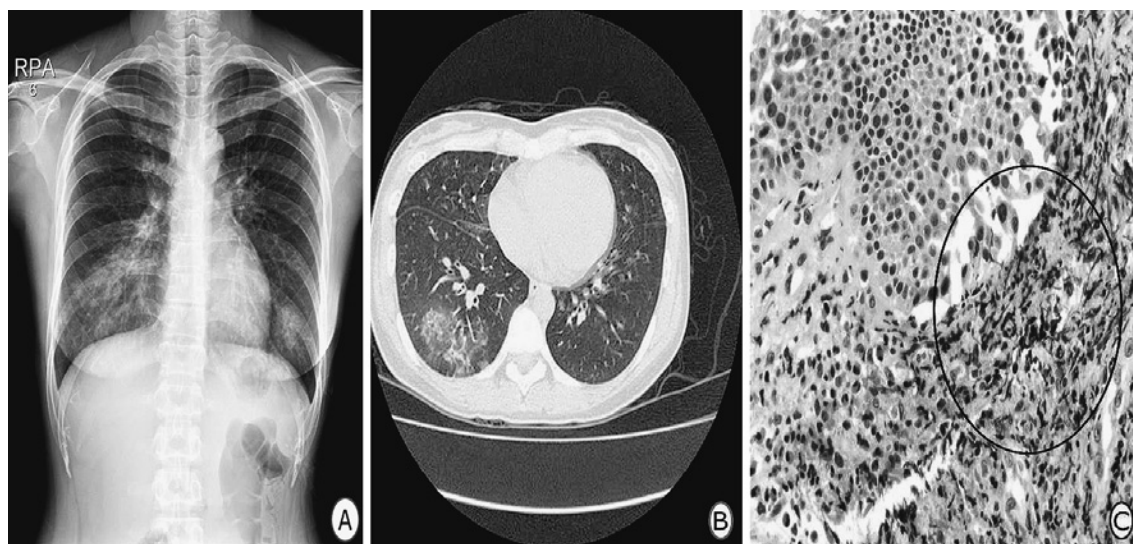


Fig. 2 **A:** A chest x-ray on admission showed both a patch infiltrations and ground-glass opacities in both lower lung fields. **B:** A chest computed tomography (CT) showed consolidations and ground-glass opacities accompanied by mild central bronchiectatic changes at both lower lobes. **C:** Histopathologic examination of the bronchoscopic biopsy specimen showed eosinophilic infiltrations, reactive hyperplasias of the bronchial epithelium and many branching fungal hyphae, being suggestive of *Aspergillus* species (H&E stain, $\times 400$).

this, the patient was given a three-day course of three-times-a-day regimen of itraconazole 200 mg, then a 3-month course of twice-a-day regimen of itraconazole 200 mg and a 1-week course of methylprednisolone 1 mg/kg. The steroid treatment doses were gradually tapered in an outpatient setting. Two weeks later, the symptoms were rapidly improved. This was

accompanied by the chest radiographic findings that the infiltration and consolidation were decreased. Total IgE concentration, which is a key indicator for assessing the treatment response and relapse, was rapidly declined after three months treatment associated with symptomatic improvement (184 IU/mL).⁹ The patient underwent no recurrent episodes at a 4-month

follow-up.

Our case can be summarized as follows:

(1) Based on a clinical, radiologic and pathologic finding, the patient definitely had CEP on first admission.

(2) Based on a 3-year non-symptomatic course as well as good treatment response, the presence of CEP would be more plausible rather than early misdiagnosis of ABPA.

(3) It can be inferred that CEP might have progressed to ABPA in the patient working in a dusty environment as the time has elapsed.

Further studies such as long-term follow-up ones are warranted to examine the relationship between CEP and ABPA.

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