

# Pulmonary aspergillosis: reports of two cases from a primary care center of Bangladesh

Podder CS<sup>a</sup>, Chowdhury N<sup>a</sup>, Chowdhury A<sup>b</sup>

### ABSTRACT

*Pulmonary aspergillosis is an uncommon condition and at the same time very much challenging to diagnose and difficult to treat. Here, we present two cases of chronic pulmonary aspergillosis, who presented with chronic low-grade fever, refractory and distressing cough and haemoptysis. The first patient was diagnosed as having aspergilloma in a pre-existing healed tubercular cavity and the second one with subacute necrotizing pulmonary aspergillosis, which simulated as bronchial carcinoma.*

**Key words:** aspergillosis, itraconazole.

(*BIRDEM Med J* 2021; 11(3): 227-230)

### INTRODUCTION

Pulmonary aspergillosis refers to the clinical spectrum of lung disease caused by several species of genus *Aspergillus*; *Aspergillus fumigatus* being the commonest. Aspergilloma usually arises in a pre-existing pulmonary cavity. On the other hand, subacute necrotizing pulmonary aspergillosis presents in an insidious manner with progressive symptoms with histological evidence of hyphal invasion with necrosis. Despite the known clinical scenario and advancement in imaging and laboratory facilities, aspergillosis remains a diagnostic challenge and notorious to treat. Here, we present two case reports emphasizing on two discrete presentations of aspergillus lung disease. These reports will enlighten us about the diverse presentation of aspergillosis and challenges in diagnosis and management.

---

### Author information

- Chinmay Saha Podder, Nandini Chowdhury, Medical Officer, Upazila Health Complex, Debidwar, Cumilla, Bangladesh.
- Ananya Chowdhury, MD Resident, Department of Microbiology, BIRDEM General Hospital, Dhaka, Bangladesh.

**Address of correspondence:** Chinmay Saha Podder, Medical Officer, Upazila Health Complex, Debidwar, Cumilla, Bangladesh. Email: chinirmoy@gmail.com

**Received:** January 25, 2021

**Revision received:** January 13, 2021

**Accepted:** June 30, 2021

### CASE REPORTS

#### Case 1

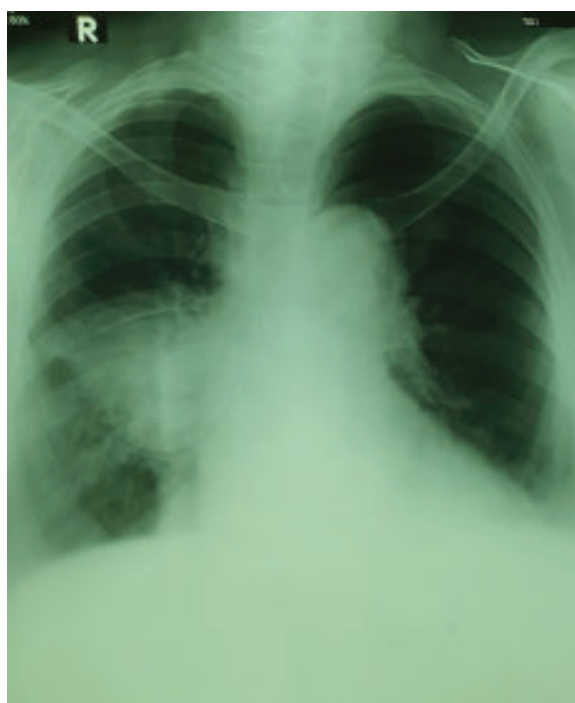
A 65-year-old gentleman with diabetes mellitus, hypertension and chronic obstructive pulmonary disease (COPD) presented with distressing cough for 1 month and occasional haemoptysis for 2 weeks. He received a course of category 1 anti-tuberculosis treatment for smear-positive pulmonary tuberculosis in 2012 and was declared cured.

The patient was looking very sick, had pursed-lip breathing and prominent accessory muscles of respiration. Respiratory rate was 24/min. Chest auscultation revealed vesicular breath sound with prolonged expiration, along with rhonchi and few fine crepitations in left 2nd to 4th intercostal space in mid-clavicular line. A chest radiograph showed inhomogeneous opacity in the left upper zone with air crescent sign (Figure 1). Sputum for acid fast bacilli (AFB) stain and Gene X-pert came negative. Random blood glucose was 16.3 mmol/L. Keeping the radiological evidence and history of pulmonary tuberculosis in 2012, he was provisionally diagnosed as having aspergilloma.

He was treated with oral itraconazole 400 mg daily as per standard protocol. He symptomatically improved during his next follow-up. He was referred to a thoracic surgeon but the patient denied any surgical intervention.



**Figure 1** Chest X-ray showing air crescent sign and an inhomogenous opacity in left upper zone



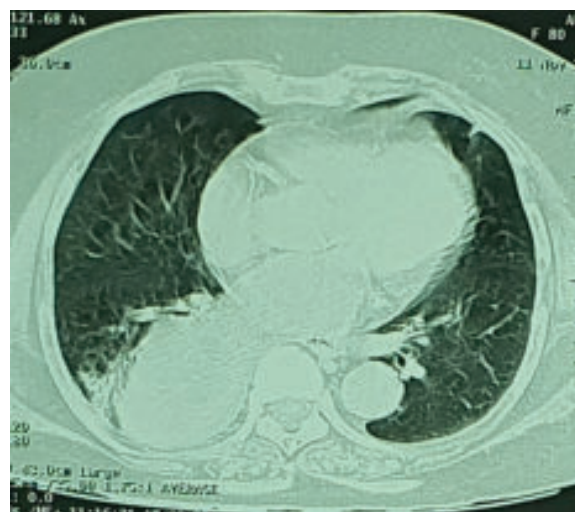
**Figure 2** Chest X-ray showing dense homogenous opacity in mid zone of right hemithorax

### Case 2

An 80-year-old diabetic lady, presented with progressive breathlessness, distressing cough and haemoptysis for 2 months. She also complained of feeling feverish during her illness but fever was not documented.

She was looking ill and anaemic. Her breath sound was vesicular except the right 5<sup>th</sup> intercostal space (ICS) and downwards where it was diminished. Capillary blood glucose was 9.8 mmol/L. Her haemoglobin was 9.2 g/dl, erythrocyte sedimentation rate was 110 mm in 1st hour, total white cells was 14,500/cmm with neutrophil 82%. Platelet count was 8,00,000/cmm. Sputum for AFB and Gene X-pert came negative. Chest X-ray revealed a dense opacity in the right mid zone with prominent right hilum (Figure 2).

Computed tomography (CT) scan was suggestive of large enhancing mass lesion in the medial aspect of lower lobe, right-sided minimal pleural effusion and right hilar lymphadenopathy (Figure 3). CT guided fine needle aspiration cytology (FNAC) of the right-sided lung mass showed numerous thick septated hyphae of fungus arranged in loose clusters and fungal balls accompanied by reactive bronchial epithelial cells with necrosis and was suggestive of aspergilloma. No malignant cells were seen.



**Figure 3** Computed tomography scan of chest was suggestive of large enhancing mass lesion in the medial aspect of lower lobe, right-sided minimal pleural effusion and right hilar lymphadenopathy

Treatment was started with itraconazole, steroid and insulin. Thoracic surgery consultation was taken and they also advised to continue oral antifungal and meticulous follow-up.

## DISCUSSION

*Aspergillus* lung disease enumerates several patterns of lung diseases caused by several species of genus *Aspergillus* and ranging from aspergilloma, allergic bronchopulmonary aspergillosis, chronic cavitary pulmonary aspergillosis, subacute invasive pulmonary aspergillosis and others. All of these entities have a considerable overlapping presentation with variability in severity.<sup>1</sup> An aspergilloma is a fungal ball formed in a pre-existing pulmonary cavity and composed of *Aspergillus* hyphae, fibrin, mucus and cellular debris.

The first case presented here was an aspergilloma. Immunocompetent patient with history of pulmonary tuberculosis with fewer symptoms, little evidence of systemic features, single cavity in radiograph with radiolucent crescent (Monod's sign) and no evidence of progression either radiologically or clinically helped to differentiate from other forms of aspergillosis. In patients with pulmonary tuberculosis with healed cavity  $\geq 2$  cm are 20 percent more prone of developing aspergilloma and chronic pulmonary aspergillosis. Globally approximately 1.2 million people have been diagnosed with chronic pulmonary aspergillosis following pulmonary tuberculosis.<sup>2</sup> On the other hand, patients with subacute invasive pulmonary aspergillosis have a more insidious course over one to three months<sup>3</sup> and they have some degree of compromised immunity. Diabetes mellitus, alcoholism, advanced age, prolonged glucocorticoid use or other immunosuppressive agents, connective tissue disorders, radiation therapy, non-tuberculous mycobacterial infection or human immunodeficiency virus (HIV) infection may predispose to subacute invasive pulmonary aspergillosis.<sup>4</sup> Hyphal invasion is the histological hallmark in this particular case accompanied by suggestive radiological findings. These patients may also have detectable *Aspergillus* antigen or *Aspergillus* IgG antibodies in the blood.

In our second case, the patient was elderly and diabetic, which maybe the responsible factor. The main differential in the 2nd case was bronchial carcinoma.<sup>5</sup> CT guided FNAC helped to confirm the diagnosis. But, keeping in mind that aspergillosis may form in the background of a cavitary bronchial carcinoma a fibre optic bronchoscopy was planned but, the patient refused due to financial constraints. Regarding the presenting complaints, chronic pulmonary aspergillosis present with chronic productive cough, fever, weight loss and haemoptysis

of variable severity.<sup>6</sup> Haemoptysis is one of the most deadly complications of pulmonary aspergillosis and has been reported in 64%-83% of cases with aspergilloma<sup>7</sup> with a mortality rate ranging from 2%-14%. Surgical resection is offered to prevent life-threatening haemoptysis and is usually curative in case of simple aspergilloma. Surgical resection should be reserved for localized unilateral disease, failure of medical treatment and permanent cure of haemoptysis. Bronchial artery embolization is an excellent therapeutic option for massive haemoptysis before surgery but results are often limited. Pre- and post-operative antifungal therapy can be used as an adjuvant to prevent *Aspergillus* empyema, post-operative pleural aspergillosis and recurrence following surgery.<sup>8-10</sup> Oral antifungal therapy is the mainstay of treatment in subacute invasive pulmonary aspergillosis. It is indicated in simple aspergilloma for those patients who are unable to do surgery but are symptomatic and have a progressive course or, immunocompromised.<sup>11</sup>

In our patients, we treated them with itraconazole 400 mg daily and was planned to continue for at least 6 months. Surgery was avoided as the patient was not fit for anaesthesia and possibly deadly surgery complications such as haemorrhage, bronchopleural fistula, respiratory failure, acute respiratory distress syndrome etc.<sup>8</sup> Early suspicion of aspergillosis can be life saving for the patient and lessen patients unbearable sufferings.

**Authors' contribution:** CSP was involved in the diagnosis, patient management and manuscript writing, NC was involved in patient management, literature review and manuscript writing, AC was involved in manuscript writing.

**Conflicts of interest:** Nothing to declare.

## REFERENCES

1. Walsh TJ, Anaissie EJ, Denning DW, Herbrecht R, Kontoyannis D, Marr KA et al. Treatment of Aspergillosis: clinical practice guidelines of the Infectious Diseases Society of America. Clin Infect Dis 2008; 46: 327-60.
2. Denning DW, Pleuvry A, Cole DC. Global burden of chronic pulmonary aspergillosis as a sequel to pulmonary tuberculosis. Bull World Health Organ 2011; 89: 864-72
3. Denning DW, Cadranel J, Beigelman-Aubry C, Ader F, Chakrabarti A, Blot S et al. Chronic pulmonary

- aspergillosis: rationale and clinical guidelines for diagnosis and management. *Eur Respir J* 2016; 47: 45.
4. Smith NL, Denning DW. Underlying conditions in chronic pulmonary aspergillosis including simple aspergilloma. *Eur Respir J* 2011; 37: 865-72
  5. Baxter CG, Bishop P, Low SE, Baiden-Amisshah K, Denning DW. Pulmonary aspergillosis: an alternative diagnosis to lung cancer after positive [18F]FDG positron emission tomography. *Thorax* 2011; 66: 638.
  6. Denning DW, Riniotis K, Dobrashian R, Sambatakou H. Chronic cavitary and fibrosing pulmonary and pleural Aspergillosis: case series, proposed nomenclature change, and review. *Clin Infect Dis* 2003; 37 Suppl 3: S265.
  7. Jewkes J, Kay PH, Paneth M, Citron KM. Pulmonary aspergilloma: analysis of prognosis in relation to haemoptysis and survey of treatment. *Thorax* 1983;38:572-8.
  8. Farid S, Mohamed S, Devbhandari M, Kneale M, Richardson M, Soon SY et al. Results of surgery for chronic pulmonary aspergillosis, optimal antifungal therapy and proposed high risk factors for recurrence—a National Centre’s experience. *J Cardiothorac Surg* 2013; 8: 180
  9. Moodley L, Pillay J, Dheda K. Aspergilloma and the surgeon. *J Thorac Dis* 2014; 6: 202.
  10. Setianingrum F, Rautemaa-Richardson R, Shah R, Denning DW. Clinical outcomes of patients with chronic pulmonary aspergillosis managed surgically. *Eur J Cardiothorac Surg* 2020; 58: 997.
  11. Sambatakou H, Dupont B, Lode H, Denning DW. Voriconazole treatment for subacute invasive and chronic pulmonary aspergillosis. *Am J Med* 2006 Jun;119(6): 527.e17-24.