

# Foreign Body Aspiration-induced Unusual Exacerbation of Chronic Obstructive Pulmonary Disease

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To the Editor: Chronic obstructive pulmonary disease (COPD) is a common preventable and treatable disease, characterized by persistent and progressive airflow limitation due to abnormal inflammation in the airways and lung to noxious particles or gases. Exacerbation of COPD is rarely induced by foreign body aspiration. In the present report, we described a male patient with acute exacerbation of COPD caused by foreign body aspiration.

In April 2015, a 67-year-old man, with known history of COPD, presented to us with increasing wheeze, shortness of breath, and productive cough. The patient described that such symptoms had recently started and were accentuated by exercise. On admission, he had no fever, chills, sweating, palpitations, chest pain, hemoptysis, weight loss, or appetite loss. The past medical history showed that the patient had suffered from COPD. Medications included SymbiCort Turbuhaler, tiotropium bromide, and salbutamol sulfate aerosol. The patient was an ex-smoker with a 50-pack-year smoking history.

On physical examination, the vital signs were within normal limits except for a temperature of 37.8°C, and an O<sub>2</sub> saturation of 85% on room air. The chest examination revealed inspiratory crackles over the right lower lung field with significant expiratory wheezing throughout the lung although there were no bronchial breathing sounds. The patient had acropachy. The remainder of the physical examination was within normal limits.

A chest radiograph obtained on admission revealed right middle lobe atelectasis [Figure 1a and 1b]. Arterial blood gas, obtained with the patient breathing oxygen (2 L/min via nasal cannula), showed pH 7.37, PaCO<sub>2</sub> 40 mmHg, and PaO<sub>2</sub> 78 mmHg. White blood cell count was  $9.32 \times 10^9/L$ , neutrophil (%) 90.1%, hemoglobin 147 g/L, and platelet count  $180 \times 10^9/L$ . Erythrocyte sedimentation rate was 15 mm/h, and C-reactive protein was 127 mg/L.

The patient was admitted to the medical ward and was treated for COPD exacerbation and possible pneumonia with albuterol and atrovent nebulizers, intravenous methylprednisolone, and cefoxitin. During the first 7 days, the patient's respiratory status had not improved and even aggravated, so antibiotic therapy was switched to imipenem. There were no significant changes in the patient's oxygenation while high-resolution computerized tomography

revealed high-density lesions in bronchi of the right middle lobe with right middle lobe atelectasis [Figure 1c].

Flexible fiberoptic bronchoscopy was performed on hospital day 10. A foreign body was seen at the opening of the right middle lobe, which caused approximately 90% middle bronchial stenosis [Figure 1e]. The foreign body was removed under vacuum aspiration [Figure 1f] revealing that was a grape seed [Figure 1e]. The remaining hospital course was unremarkable, and the patient was recovery and discharged on hospital day 10. A computerized tomography was provided 1-month after discharging to follow-up the investigation, and the results revealed right middle lobe atelectasis as before [Figure 1d] while the patient's respiratory status had improved significantly.

Foreign body aspiration is a rare occurrence in adults; however, its prevalence increases with advancing age beginning in the sixth decade.<sup>[1]</sup> Here, we reported a case of a 67-year-old man with foreign body aspiration. Precipitating factors for foreign body aspiration in the elderly possibly include a depressed mental status, intubation, or impairment in the swallowing reflex. Tachypnea, which can be associated with medical conditions common to this age group, has been shown to alter the coordination between deglutition and respiration.<sup>[2]</sup> Perhaps these circumstances contribute to the increased risk of foreign body aspiration events in the elderly.

The patient's underlying COPD is an additional predisposing factor. In our case, the patient had suffered from COPD for 16 years. High incidence of impairment of the swallowing reflex in patients with COPD might represent a potential risk factor for exacerbation of COPD.<sup>[3]</sup> A weak swallow may contribute to an increased risk for aspiration of pharyngeal contents,<sup>[4]</sup> leading to respiratory diseases including exacerbation of COPD.<sup>[3]</sup> One of another reasons is that chronic inhaled corticosteroids and anticholinergics may affect

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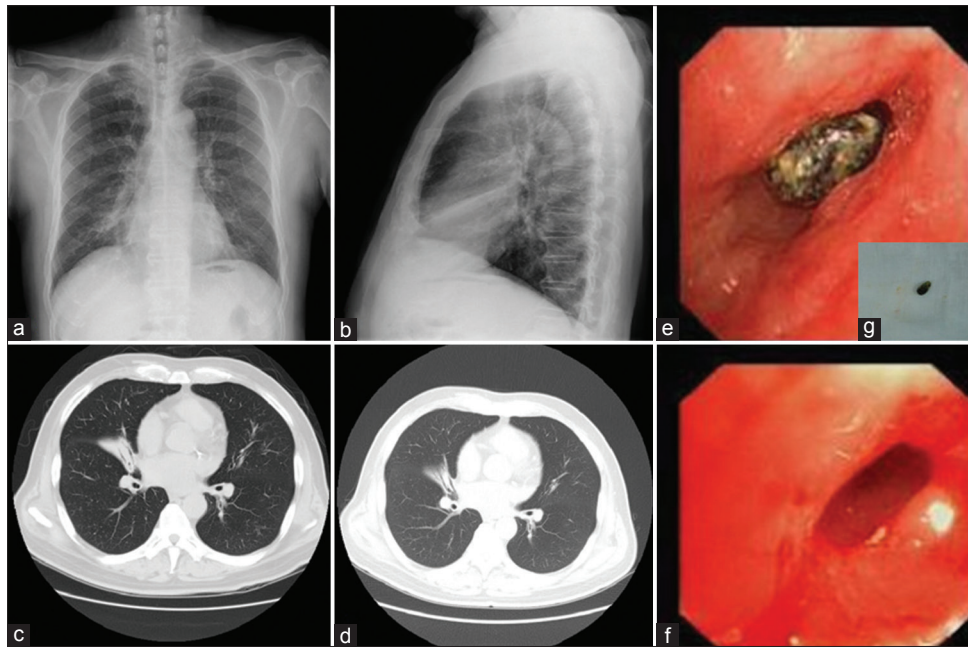
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**Figure 1:** Posterior-anterior (a) and lateral (b) chest radiographs showed right middle lobe atelectasis. Computed tomography scan of the chest showed high-density lesions in bronchi of the right middle lobe with right middle lobe atelectasis (c). Computed tomography scan of the chest showed right middle lobe atelectasis 1-month after discharge (d). Bronchoscopic images showed the views of bronchi of the right middle lobe with foreign body (e) and dislodgment of the foreign body (f). The foreign body was identified as a grape seed (g).

the sensory mucosa of the laryngopharynx, thereby reducing laryngopharyngeal sensitivity and increasing incidence of foreign body aspiration in COPD patients.<sup>[4]</sup> Taken together, these factors may increase chances of aspirating foreign body into the airway in the elderly with COPD.

The most common presenting symptoms of a foreign body in the airways include chronic cough, wheezing, dyspnea, and hemoptysis, resulting in repeated infections. Although a history of choking episodes may raise early suspicion of aspiration into the airways, it may not always be apparent in all patients. Many cases with foreign body aspiration were unrecognized and misdiagnosed as bronchiolitis or asthma.<sup>[5]</sup> Thus, chronic complications occurred because of a delayed correct diagnosis. The complications include recurrent pneumonia, bronchiectasis, hemoptysis, atelectasis, as well as inflammatory polyps at the site of impaction, which can induce exacerbation of COPD. The images of foreign body aspiration on chest radiographs are typically nonspecific although it may reveal areas of increased opacities, postobstructive infiltrate or hyperinflation, and atelectasis. Computed tomography scanning of the chest may also show nonspecific infiltration in bronchi or parenchyma.

In conclusion, foreign body aspiration may be one of the independent risk factors for exacerbation of COPD. We present a case of aspiration of a grape seed, which caused wheeze leading to the exacerbation of COPD. The recognition of the foreign body (seed) could not be exactly visualized by noninvasive means. Thus, flexible fiberoptic bronchoscopy should be considered as the first-line approach in patients with obstructive airway disease who are unresponsive to routine therapies. The consideration of potential foreign body aspiration in such patients

allows for early recognition and appropriate management, thereby decreasing the incidence of costly and unnecessary complications.

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### Conflicts of interest

There are no conflicts of interest.

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