Iron pill pneumonitis with reactive lymph nodes

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ABSTRACT

Iron pill pneumonitis can result from accidental aspiration. It usually presents as a triad of airway inflammation, aspiration, and hemosiderin deposition. We report a case of an elderly woman with chronic cough, infiltrates, and lymphadenopathy on imaging alongside nonnecrotizing granulomas on biopsy diagnosed with iron pill pneumonitis.

KEYWORDS Aspiration; iron; pneumonitis

Foreign body aspiration is a common cause of accidental death in the USA.¹ The incidence in adults is between 0.2% and 0.33% of all patients referred for bronchoscopy.^{2–5} Risk factors in adults include primary neurological and psychiatric disorders, trauma with loss of consciousness, medical and dental procedures, tracheostomy cannulation, and alcohol and sedative use.^{2–5} The most frequently aspirated objects are food items and inorganic materials.^{2–5} The foreign body is typically located in the right bronchial tree, especially the lower lobe and right intermediate bronchi.^{2–5} This is due to the right main stem bronchus being almost vertical. The triad of cough, wheezing, and reduced air entry on exam raises suspicion for aspiration of a foreign body.⁶ Aspiration of tablets, if chemically active, can lead to airway injury and bronchial stenosis.⁶

CASE REPORT

An 80-year-old woman with a history of histoplasmosis at 20 years of age, tobacco abuse, iron deficiency anemia (on iron), and opioid dependence was referred for complaints of chronic nonproductive cough and an abnormal chest computed tomography (CT) results. Cough had been present for 10 months. She denied any chest pain, fever, wheezing, weight loss, or night sweats. She reported dysphagia but did not recall a specific instance of aspiration. She was also on levothyroxine, furosemide, potassium chloride, oxycodone (as needed), chlorpheniramine, omeprazole, and duloxetine. Her vitals were

normal and stable. The physical exam was significant for decreased breath sounds over the right lung base.

A chest x-ray revealed mild prominence of markings in the right lung base as well as evidence of a prior granulomatous disease. Subsequent CT of the chest showed calcified right hilar and mediastinal lymph nodes (*Figure 1*). Flexible bronchoscopy showed a hyperpigmented nodular lesion at the carina, between the right middle lobe and right lower lobe. Forceps biopsy of this lesion was performed, followed by bronchoalveolar lavage.

Pathology showed fibrosing/granulomatous tissue with prominent hemosiderosis without evidence of malignancy (*Figure 2*). Bronchoalveolar lavage was negative for malignancy, and all cultures were negative. There was still significant concern for a malignant process, so the patient underwent bronchoscopy with endobronchial ultrasound-guided biopsy of the subcarinal lymph node. Cytology did not reveal any malignancy; a cell block revealed nonnecrotizing granulomas. The lymph node biopsy was stained for acid-fast bacilli and for fungus using Gomori methenamine silver, and both stains were negative.

DISCUSSION

Our patient's constellation of probable aspiration, airway inflammation with hyperpigmentation, and extensive hemosiderosis on pathology is consistent with iron pill pneumonitis, as described by Lee et al.⁶ Our patient also

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Figure 1. CT of the chest: (a) mediastinal view and (b) lung window with right middle lobe and right lower lobe multifocal tree-in-bud opacities and an enlarged subcarinal lymph node.

Figure 2. Lymph node biopsy: (a) hematoxylin and eosin section showing granuloma and (b) high-power magnification showing hemosiderin deposits.

had mediastinal lymphadenopathy on imaging and granulomatous disease on biopsy, which has not previously been described.

The diagnosis of pill aspiration should always be considered in patients, especially those with unexplained pulmonary symptoms or recurrent pneumonia. Patients may not always have the classic risk factors and may not recall the aspiration event. Patients may also present with anorexia, cough, hemoptysis, pleuritic chest pain, wheezing, night sweats, and fever.²⁻⁸ Early complications of foreign body aspiration may include choking, acute dyspnea, laryngeal edema, asphyxiation, pneumothorax, and cardiac arrest.⁹⁻¹⁵ Late complications include hemoptysis, bronchiectasis, bronchial stricture, development of inflammatory polyps, diminished perfusion to the lung, pneumonia, empyema, and death.⁷

On exam, patients may appear ill, with dullness to percussion and decreased breath sounds, or they may have

wheezing and rhonchi. They may have leukocytosis, anemia, and an elevated erythrocyte sedimentation rate and C-reactive protein.⁷ Chest x-ray may be normal after foreign body aspiration, especially pill aspiration, as the pill may have already been absorbed.^{2,3} However, radiopaque tablets, such as calcium tablets, may be visible. Other chest x-ray findings may include atelectasis, volume loss, lung collapse, and infiltrates.^{3,16} CT scan of the chest may show diffuse thickening of the trachea and involved bronchi.

Bronchoscopy findings of iron pill aspiration usually start with grossly inflamed golden yellow mucosa, with edematous and erythematous mucosa.¹⁰ There may also be necrosis, ulceration, and sloughing.⁶ Later, the mucosa may turn brown, possibly due to hemosiderin, with the presence of necrotic material. With more chronicity, there may be bronchial stenosis and complete occlusion of the bronchus.^{8,14} Histologically, atypical squamous cells in bronchial washings and squamous metaplasia may be seen.⁷ In the late stages,

granulation tissue and scarring result in stenosis and cartilage destruction.

Definitive treatment requires bronchoscopy, either flexible or rigid.^{2-9,16} Limper and Prakash showed rigid bronchoscopy to be superior to flexible bronchoscopy (99% vs 60%) in removal of foreign bodies.² However, a more recent series by Mise et al showed a high success rate (90.7%) with flexible bronchoscopy alone.⁵ Shark tooth and alligator forceps were the most common forceps used in foreign body removal in a large case series from India.⁴ If both flexible and rigid bronchoscopies fail to retrieve the foreign body, then surgery, with thoracotomy and lobectomy, may be required.⁵

Antibiotics, steroids, and topical mitomycin C have been tried to mitigate the effects of iron pill aspiration and prevent the dreaded sequela of bronchial stenosis, with some success.⁶⁻⁹ Inhaled lidocaine has been used to help the chronic cough that some patients develop.⁷ Bronchoscopic balloon dilation, mechanical dilation, laser photo resection, and forceps debridement have been used for treatment of bronchial stenosis.⁸ Lobectomy and pneumonectomy are the treatments of last resort.⁵ Surveillance bronchoscopy is recommended for all patients with iron pill aspiration to document resolution of bronchial inflammation or stenosis.⁷

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