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Title	Pill aspiration: an under-recognised clinical entity

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Pill aspiration: an under-recognised clinical entity

Clinical record

An 85-year-old man with a history of type 2 diabetes, vascular disease and chronic kidney disease awoke with central sharp pleuritic pain radiating through to his back. He had been otherwise well leading up to this presentation. On examination, he had a temperature of 37.9°C, tachypnoea (respiratory rate, 25–30 breaths per minute), shallow breathing, and oxygen saturation of 88% on room air. Auscultation of his chest revealed vesicular breath sounds throughout both lung fields. Investigations showed a total white cell count of 16.6×10^9/L (reference interval, $4.0–11.0 \times 10^9$/L) and a C-reactive protein level of 26 mg/L (reference interval, < 5mg/L). Chest x-rays were unrevealing (Supporting Information). Differential diagnoses of pulmonary emboli, pulmonary sepsis and aortic dissection were considered. Computed tomography pulmonary angiography revealed a foreign body in the inferior portion of the right bronchus intermedius with the features of a pill (Box). On specific questioning, the patient reported having difficulties swallowing metformin the previous night, which was part of his therapeutic regimen for diabetes, although he did not report choking or coughing. Unfortunately, the patient suffered an unrelated fatal stroke before undergoing his planned bronchoscopy.

Discussion

Medicinal pills are estimated to constitute 7% of foreign body aspirations.[1] Diagnosis can be difficult and pill aspiration is likely an under-recognised clinical entity, as recollection of an aspiration event is variable, with only half of adult patients providing a clear history of such an event.[2]

Patients may have variable presentations owing to the different mechanisms through which the airways are affected following aspiration of a pill. The history may range from the classic acute episode of a choking sensation followed by cough, wheeze and unilateral decreased air entry resulting from airway obstruction, to a more chronic picture similar to asthma as a consequence of the aspirated pill dissolving within the bronchial mucosa with secondary airway injury.[2-4] An intractable cough is another potential presentation.[5] Pills may not be evident on chest x-ray due to varying degrees of radiolucency, and a high index of suspicion is therefore required if a patient reports a history that could align with pill aspiration.

The inflammatory reaction caused by a pill when aspirated is dependent on its chemical composition. Much of the literature focuses on iron supplements, which incite a specific and well documented aspiration syndrome involving airway inflammation and histological iron deposits within bronchial biopsies. Metformin, thought to be the

offending tablet in this case, may cause severe airway inflammation and recurrent obstruction due to concentric necrotic material within the affected bronchus.[3] However, accurately predicting the consequences of untreated pill aspiration is difficult because of the vast array of medications available and individual chemical composition.

When approaching a case of potential pill aspiration, early bronchoscopy and pill removal are key to avoiding long term sequelae.[1,2,4,5] If airway injury has occurred, the focus should shift to maintaining airway patency. This may require ongoing bronchoscopic surveillance, and interventions such as balloon dilatation. Some patients with more severe airway injury will require surgical interventions such as lobectomy or pneumonectomy.

Lessons from practice

- Pill aspiration is relatively common and under-recognised. Clinicians should be mindful of this entity when caring for patients who are at high risk of aspiration.
- Clinical presentation is variable and chest x-rays may be unrevealing. Clinicians require a high degree of suspicion, and early bronchoscopy is the best method of evaluation.
- Management includes the early removal of the pill via bronchoscopy. Clinicians should be aware of secondary airway inflammation and stenosis leading to long term morbidity, occasionally requiring surgical intervention.

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[Box]

Contrast-enhanced computed tomography pulmonary angiography of the chest

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A: Coronal view, showing linear density within the right bronchus intermedius (arrow), suggestive of an inhaled foreign body with incomplete obstruction. No pulmonary embolus was identified. **B:** Sagittal curved reformat, showing that the abnormal density was also round and greater than that of the surrounding airways.