Iron-pill inhalation
Matlawene J Mpe, William Diprose

Aspiration of iron tablets is rare but constitutes a medical emergency. It can induce severe and potentially fatal chemical injury to the tracheo-bronchial tree. Prompt recognition and management will minimise both the acute and chronic complications. The diagnosis can be challenging; symptoms and signs are nonspecific. Urgent airway examination is essential.

Case report
A 50-year-old woman presented with sudden-onset cough, chest pain, wheeze and vomiting. She had just taken ferrous sulphate with her evening meal and was concerned it might have gone down the “wrong way”.

Her examination was unremarkable, including normal vital signs and respiratory examination. Her chest x-ray (CXR) was normal. She was observed overnight and discharged with advice to see her general practitioner (GP) if symptoms deteriorated.

She re-presented four days later with continued wheeze and a hoarse voice. Her examination was again unremarkable except for new bilateral wheeze. Her CXR showed minor atelectasis around the horizontal fissure. She improved following a single dose of 40mg prednisone 2.5mg nebulised salbutamol and was discharged with a further three-day course of prednisone.

Eight weeks later she was referred to the respiratory service by her GP with persistent symptoms. She proceeded to bronchoscopy where rusty secretions emanating out of the right upper lobe were noted; with a denuded, friable and easy bleeding right upper lobe mucosa and necrotic debris (Figure 1). No tablet was seen.

Pathologic examination of the bronchial washings showed acellular pigmented material that stained strongly positive for iron with Perl's stain (Figure 2). A follow-up bronchoscopy 12 weeks after her original injury found almost complete occlusion of her right upper lobe. Subsequent rigid bronchoscopy and attempts at dilatation of the right upper lobe bronchus was unsuccessful. She remains asymptomatic but with permanent atelectasis of the right upper lobe.

Figure 1: Bronchoscopic view of the abnormalities in her right upper lobe.
Discussion

It is estimated that 7% of all foreign body aspirations are medicinal pills. Pill aspiration represents a distinct clinical entity, requiring a high index of suspicion for a precise and timely diagnosis. Occasionally, serious and potentially life-threatening complications involving the airways can occur. The mechanism of airway injury depends on the properties of the pill; for example, inert tablets tend to have less severe complications that are easily dealt with by mechanical extraction.

Iron tablet aspiration is the most commonly described, likely due to its severe and lasting airway effects. Iron tablets are chemically active, disintegrate quickly and rapidly dissolve into the airway mucosa. The suggested mechanism of injury is local production of cytotoxic oxidants and free radicals from oxidation of ferrous sulphate. The consequences can range from airway mucosal inflammation and tissue necrosis to bronchial perforation, haemoptysis, lobar consolidation and permanent airway stenosis. A case requiring lobectomy and a fatality have been described.

Symptoms of aspiration are nonspecific and a good history and a high index of suspicion is essential. Chest radiographs are of limited diagnostic value.

Endoscopic airway examination is essential for diagnosis and evaluation of complications. An intact form of the ferrous sulphate tablet is rarely found. Histological examination of bronchial washings or biopsies may stain for ferric iron.

With prompt tablet removal and supportive measures such as steroids, a favourable outcome can be expected even though the effectiveness of steroids in reducing airway complications has not been established. After the initial evaluation and management, surveillance bronchoscopy is recommended to identify complications in a timely manner when endobronchial therapies (bronchoplasty, stenting, etc) can be effective.

Figure 2: Acellular pigmented material observed in the bronchial washings, which stained strongly positive for iron with Perl's stain.
REFERENCES:


