Iron-induced esophageal ulceration

Esophageal inflammation or ulceration is a well-recognized side-effect of some oral medications, especially nonsteroidal anti-inflammatory or potassium chloride tablets. A similar injury can be induced by iron but endoscopically detected lesions are rarely reported [1,2]. An 82-year-old woman presented a sudden complaint of dysphagia after ingestion of a ferrous sulphate tablet. She had chronic esophageal reflux and Raynaud’s syndrome. Her physical examination was normal.

An upper endoscopy revealed a black-brown, ulcerated and necrotic lesion, just below the upper esophageal sphincter, 2 cm in length, well circumscribed and associated with a slight stenosis. Below the lesion the esophageal lumen was distended and atonic, with candidiasis and a grade D peptic esophagitis (Video 1).

Histological evaluation revealed ulcerated esophagitis, with acute inflammatory granulation tissue containing abundant brown crystalline nonbirefringent material, confirmed as iron by Perl’s staining (Fig. 2). Other stainings for brown pigments and infections were negative. The patient’s iron tablets were stopped and a high dose proton pump inhibitor was prescribed. The dysphagia was relieved and a repeat upper endoscopy revealed progressive resolution of the necrosis and stenosis (Video 2).

Iron-induced esophageal erosions or ulcerations are seldom described and the differential diagnoses might be striking. Tablett debris seen at endoscopy is diagnostic but rarely detected. Histological examination reveals a typical brown crystalline material positive with Perl’s staining [1,3,4]. The pathogenesis is believed to be a high local iron saturation causing a concentration-dependent absorption, resulting in the formation of reactive oxygen metabolites and mucosal injury [3]. Anatomical factors such as motility disorders or previous inflammation might predispose to the iron injury [3,4].

Treatment requires stopping the offending drug or, if iron is still necessary, changing to a liquid preparation [3,5]. Iron-induced lesions are not endoscopically specific and histological investigation is essential to the diagnosis.


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Video 1
Upper endoscopy at day 1 revealed a black-brown, ulcerated and necrotic lesion, just below the upper esophageal sphincter and a distended atonic esophagus.

Video 2
Upper endoscopy at day 8 showing the progressive resolution of the lesion with a circumferential brown-pigmented lesion with no necrosis or stenosis.

Fig. 1 Upper endoscopy at day 1 revealed a black-brown, ulcerated and necrotic lesion, just below the upper esophageal sphincter.

Fig. 2 Granulation tissue from the area with ulcerated esophagitis containing abundant brown crystalline material (hematoxylin and eosin, ×400).

Fig. 3 Positive blue staining of the crystalline material with Perl’s iron stain (×400).

Fig. 4 Upper endoscopy at day 8 showing the progressive resolution of the lesion, with a brown pigmentation and no necrosis.