

Doxycycline-induced gastric injury

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A 28-year-old man with good past health presented with fever, dyspnoea, and pleuritic chest pain in April 2022. Blood tests showed hypochromic microcytic anaemia with haemoglobin level of 7 g/dL but no bleeding symptoms. Chest X-ray revealed left-sided pleural effusion. The working diagnosis was chest infection with parapneumonic effusion. He was treated with empirical co-amoxiclav and doxycycline.

Thoracocentesis yielded blood-stained fluid with an exudative biochemistry. Pleural fluid adenosine deaminase level was 58 U/L and cytology was negative. Findings were suspicious of tuberculous pleural effusion. Gastroscopy was arranged for his anaemia and revealed severe gastritis over the body and fundus with overlying yellowish exudates (Fig 1a). Biopsies excluded *Helicobacter pylori* infection but revealed superficial mucosal necrosis with acute neutrophilic infiltrates (Fig 2). The superficial capillaries displayed eosinophilic degeneration (Fig 3) with microthrombi formation (Fig 4). These histological findings are characteristic of doxycycline-induced gastric mucosal injury.¹⁻³

Doxycycline was withdrawn and the patient was started on antituberculosis treatment. Pleural fluid culture later confirmed infection with *Mycobacterium tuberculosis*. Follow-up upper endoscopy at 3 months showed complete resolution of gastric mucosal injury (Fig 1b). Haemoglobin analysis revealed findings compatible with Haemoglobin H disease.

Doxycycline is a tetracycline-class antibiotic commonly prescribed to cover atypical organisms in community-acquired pneumonia. It is a

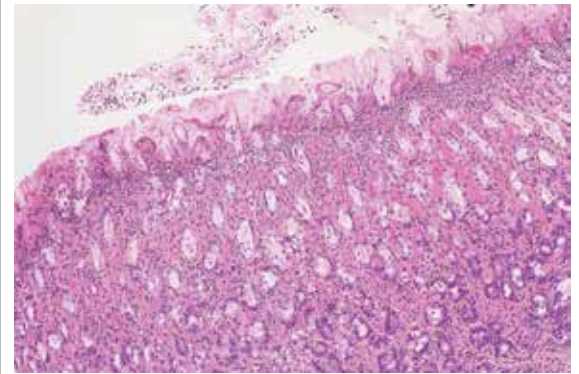


FIG 2. Superficial mucosal necrosis with acute neutrophilic infiltrates (haematoxylin and eosin staining, ×20)

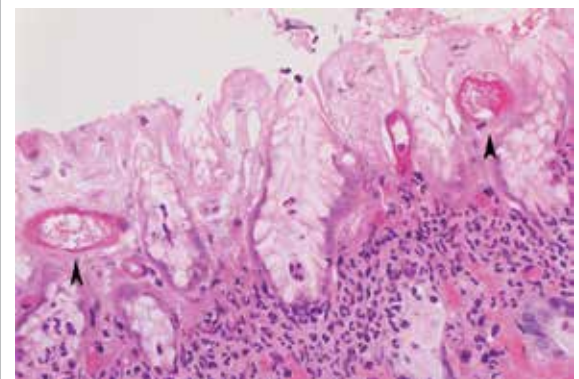


FIG 3. Eosinophilic degeneration of capillaries with fibrinoid material (arrowheads) [haematoxylin and eosin staining, ×40]

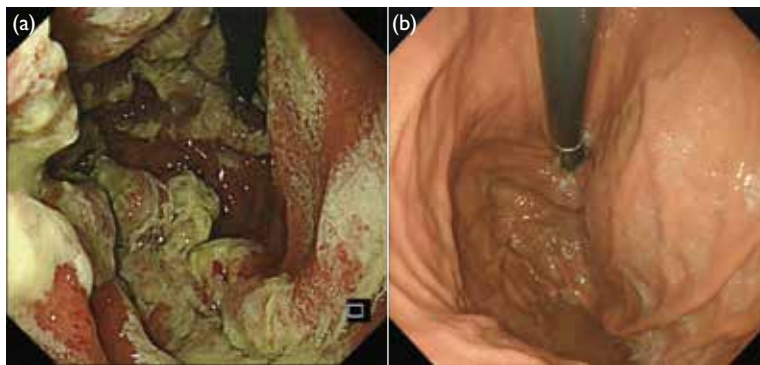


FIG 1. (a) Severe fundal and body gastritis with overlying yellowish exudates. (b) Complete resolution of gastritis on follow-up oesophagogastroduodenoscopy

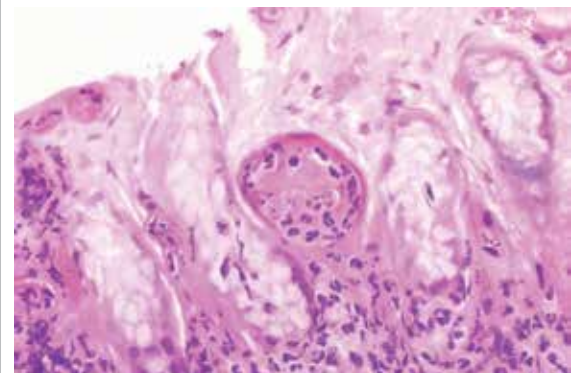


FIG 4. Capillary with microthrombi formation (haematoxylin and eosin staining, ×60)

well-reported cause of oesophagitis and even ulcerations.⁴ On the contrary, doxycycline-induced gastric mucosal injury is rare and has a distinctive histological pattern. The underlying mechanism of injury is poorly understood. Duration of doxycycline treatment ranges from 5 days to 3 years.¹⁻³ These patients often present with dysphagia, chest and epigastric pain or anaemia. Symptoms typically resolve following drug withdrawal and healing of the mucosa.¹⁻³

Awareness of an association with doxycycline use, coupled with endoscopic and unique histological findings, facilitate prompt diagnosis of this condition.

Author contributions

All authors contributed to the concept or design of the study, acquisition of the data, analysis or interpretation of the data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have disclosed no conflicts of interest.

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Ethics approval

The patient was treated in accordance with the Declaration of Helsinki and provided informed consent for all procedures.

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