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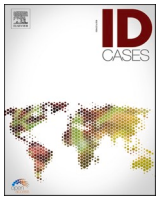

Case report

Phlegmonous gastritis: Evolving from surgical to medical disease

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ABSTRACT

We present a case of phlegmonous gastritis, which is a rare, life-threatening infection involving transmural inflammation of the stomach of multiple possible etiologies. Historically this disease has required surgical management, including gastrectomy, which is quite morbid. Evolving literature suggests that antimicrobial therapy alone may be adequate treatment for this infection. The diagnosis of phlegmonous gastritis was suggested by radiology but confirmed by endoscopic pathology. This particular case is unique given the patient's age, lack of co-morbidities and being the first description of *Helicobacter pylori* with phlegmonous gastritis. We report on a specific successful antimicrobial regimen and duration of therapy, which has not been well documented elsewhere in the literature, which may be helpful to clinicians.

Case

A 19-year-old man with no significant past medical history presents with three weeks of severe epigastric pain without radiation (which improves with emesis), inability to tolerate oral intake and a 15-pound weight loss. Prior to symptom onset he had a large meal at a Greek restaurant consisting of bone-in fish and lamb; however, no one else at the table was sick following the meal. He has intermittently visited North-East Africa for family affairs, but his last travel was three years' prior. The patient does not drink or smoke.

Since the onset of illness, the patient has had multiple hospitalizations at outside facilities; he was initially diagnosed with *Helicobacter pylori* gastritis and started on quadruple therapy with tetracycline, metronidazole, bismuth, and a proton-pump inhibitor. He was discharged, but after a week of quadruple therapy his vomiting had worsened in frequency, so he presented again for admission. At the outside facility there was concern for failure of therapy for *H. pylori* gastritis and, while the bismuth and the PPI were continued, he was started on amoxicillin and clarithromycin in place of the prior antibiotic regimen. After tolerating a clear liquid diet, the patient was again discharged but presented to our facility about a day later after having multiple episodes of non-bloody, non-bilious vomiting and inability to tolerate oral intake.

On admission the patient was afebrile and hemodynamically stable on room air. Exam revealed an uncomfortable appearing male with normal body mass index, regular cardiac rhythm with no murmur, clear lung fields, no costovertebral angle tenderness bilaterally, and no focal neurologic signs. His abdomen was soft, non-distended and without increased tenderness to palpation. No organomegaly was evident, bowel sounds were diminished throughout and he had no visible rash nor palpable lymphadenopathy. His initial leukocyte count was 14.90 x10^3 cells/uL with left shift. Hemoglobin and platelets were normal. Sodium was 132 mmol/L, chloride 92 mmol/L, serum bicarbonate 23 mmol/L, creatinine 0.9 mg/dL. While total protein and albumin were normal, total bilirubin was 1.3 mg/dL, conjugated bilirubin was 0.4 mg/dL, alkaline phosphatase 147 U/L, aspartate transaminase 33 U/L and alanine transaminase was 75 U/L. His lipase was elevated to 428 U/L.

Chest imaging was unremarkable, and contrast enhanced computed tomography of the abdomen revealed diffuse bowel wall thickening involving the stomach with mucosal enhancement, as well as patches of focal thickening with retained fluid in the stomach (Fig. 1). Also notable on cross-sectional imaging was diffuse adenopathy involving the mesenteric, gastro-hepatic, and para-aortic abdominal lymph nodes. No pancreatic enhancement noted.

Initial microbiologic testing including HIV screen, COVID-19 nasopharyngeal nucleic acid amplification testing (NAAT), Quanti-FERON Gold, cytomegalovirus (CMV) NAAT, blood cultures and urine cultures were negative. An upper endoscopy was pursued which revealed congested, erythematous, eroded, friable, nodular and scalloped gastric mucosa as well as erythematous mucosal changes in the duodenum (Fig. 2).

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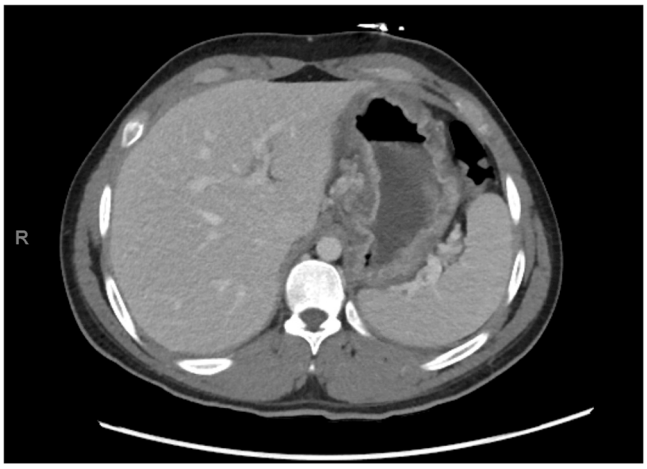

Fig. 1. Computed tomography (CT) scan of abdomen pelvis demonstrating diffuse thickening of gastric body, lymphadenopathy and a fluid level in stomach.

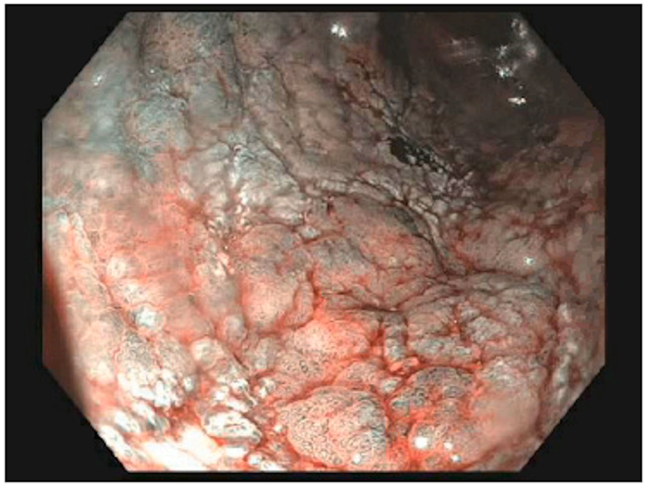

Fig. 2. Upper endoscopy demonstrating friable, nodular, erythematous and congested mucosa of pre-pyloric stomach.

Diagnosis and management

Pathology from the upper endoscopy revealed rare gland abscesses and diffuse lamina propria neutrophilic inflammation. Rare eosinophils were found as well as small lymphoid aggregates of polymorphic small lymphocytes. Stains for CMV and *H. pylori* were negative (after having received about two weeks of *H. pylori* directed treatment). There was no evidence of lymphoma or other malignancy. Features overall were consistent with a diagnosis of phlegmonous gastritis and duodenitis. Cultures from gastric biopsy grew *Granulicatella adiacens* in broth medium only, as well as one colony of coagulase-negative *Staphylococcus* species. The patient received a 14-day course of IV daptomycin (due to a medication reaction, IV vancomycin was deferred) and cefepime. He also eventually completed a two-week course of quadruple therapy for *Helicobacter pylori* infection. He was followed closely by Infectious Disease, General Surgery, and Gastroenterology during his stay. Half-way through the antibiotic course for phlegmonous gastritis his symptoms began improving, his appetite returned, and radiographic thickening of the gastric lining resolved. Three months following his initial hospitalization he is now in his usual state of health and follow up upper endoscopy revealed normal gross appearance of his stomach and esophagus. He did not require gastrectomy nor other surgical management.

Discussion

Phlegmonous gastritis is a rarely encountered infection involving all layers of the gastric body which is mostly found in older male patients with significant medical co-morbidities and immunocompromise [1]. Historically this disease was treated surgically with gastrectomy due to potential mortality benefit [2], but more recent data suggest lone antibiosis for two weeks may be effective as well [3–6]. Symptoms typically include fevers, abdominal pain, nausea and emesis (sometimes containing blood or pus) [7]. Pathogens recovered from the gastric mucosa of patients with this condition predominantly include *Streptococcus* species and *Enterococcus* species; however, many infections are mixed and therefore broad antimicrobial coverage is warranted [8]. The inciting factor may be local mucosal trauma (including iatrogenic) [9, 10], adjacent malignant or inflammatory processes [11,12] or may be unknown.

Our case is unique in that the patient was young, without medical co-morbidities or immunosuppression, and responded well to a two-week course of IV antibiotics sparing the need for surgical management. The inciting event for this infection in unclear. Perhaps his initial *H. pylori* gastritis, a bone from seafood, or another such trigger played a role in his initial illness. Notably, per our review, there is one case of phlegmonous gastritis associated with *Helicobacter heilmannii* in a younger patient as well [12], but no other reports describing association with another *Helicobacter* species. Phlegmonous gastritis is a rare entity which Infectious Disease specialists, Gastroenterologists, General Practitioners, and General Surgeons should be aware of due to historically high morbidity and mortality, as well as its similar presentation to diseases with disparate treatment and prognosis (such as viral gastroenteritis, mucosal-associated lymphoid tissue lymphoma, *H. pylori* gastritis, pancreatitis and cholecystitis).

Ethical approval

Case reports are not codified as research for the purposes of our IRB and therefore IRB approval was not requested for this publication.

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Consent

Written and verbal consents were obtained from patient for publication and clinical image use.

CRediT authorship contribution statement

Michael Czapka: Conceptualization, Investigation, Writing – original draft. **Stephen Schrantz**: Investigation, Writing – review & editing, Supervision.

Declaration of Competing Interest

Dr. Czapka has no relevant financial disclosures, Dr Schrantz receives salary support from ICON plc.

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