

Collagenous Gastritis: An Atypical Presentation of a Rare Disease

Review began 01/30/2023

Review ended 02/04/2023

Published 02/06/2023

© Copyright 2023

Kagihara et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Jaclyn E. Kagihara ¹, Julia L. Boland ², Giancarlo Colon Rosa ², Divya Mamilla ³, Mamoun Younes ³, Marie L. Borum ¹, Samuel A. Schueler ¹

1. Division of Gastroenterology and Liver Diseases, George Washington University School of Medicine and Health Sciences, Washington, DC, USA 2. Internal Medicine, George Washington University School of Medicine and Health Sciences, Washington, DC, USA 3. Pathology, George Washington University School of Medicine and Health Sciences, Washington, DC, USA

Corresponding author: Samuel A. Schueler, samuel.a.schueler@gmail.com

Abstract

Collagenous gastritis is a rare inflammatory condition of unknown etiology defined histologically by subepithelial deposition of collagen bands $\geq 10 \mu\text{m}$ in the lamina propria. Adults typically present with diarrhea, often attributed to concurrent collagenous sprue or collagenous colitis. Children more commonly present with abdominal pain and anemia, with inflammation typically limited to the stomach. Herein, we present a case of collagenous gastritis in a 38-year-old female with a history of iron deficiency and hypothalamic amenorrhea who presented with a one-year history of microcytic anemia. Celiac disease panel, *Helicobacter pylori* testing, and anti-parietal cell and intrinsic factor antibodies were negative. Esophagogastroduodenoscopy revealed diffusely erythematous and nodular gastric mucosa in the antrum and pylorus. Biopsy from the gastric body showed complete loss of oxyntic glands and deposition of a thick band of collagen under the surface epithelium infiltrated by a few eosinophils, consistent with collagenous gastritis with severe atrophy. She was treated with omeprazole 40 mg daily for six weeks and iron supplementation. Our patient's symptoms and endoscopic findings are consistent with previously described pediatric, but not adult, cases of collagenous gastritis, yielding insight into the variable clinical presentation of this rare disease.

Categories: Internal Medicine, Pathology, Gastroenterology

Keywords: anemia, iron deficiency, esophagogastroduodenoscopy, collagen deposition, egd, iron deficiency anemia (ida), gastritis, collagenous gastritis

Introduction

Collagenous gastritis (CG) is a rare condition marked by inflammation, which drives subepithelial deposition of collagen bands in the stomach [1]. The prevalence of CG on esophagogastroduodenoscopy (EGD) is approximately 13 per 100,000 EGDs [2]. Limited data on this condition have demonstrated a bi-modal age distribution, with pediatric patients typically presenting with anemia and abdominal pain [3]. Adults typically present with diarrhea and sometimes present with concomitant collagenous colitis or other autoimmune diseases [2]. Herein, we report an atypical presentation of CG in an adult female who presented with iron deficiency anemia and abdominal pain.

This article was previously presented as a meeting poster at the 2021 American College of Gastroenterology (ACG) Annual Scientific Meeting on October 22, 2021.

Case Presentation

A 38-year-old woman with a six-year history of iron deficiency and hypothalamic amenorrhea presented to our clinic with a one-year history of anemia. The evaluation showed a hemoglobin of 9.9 grams/deciliter (g/dl) (baseline: 13-14 g/dL), iron deficiency with a ferritin level of 4 nanograms/milliliter (ng/ml), and vitamin B12 deficiency with a level of 144 picograms (pg)/ml (Table 1). She endorsed pagophagia. She was referred to gastroenterology given concerns for malabsorption as the cause of her iron and vitamin B12 deficiency.

How to cite this article

Kagihara J E, Boland J L, Colon Rosa G, et al. (February 06, 2023) Collagenous Gastritis: An Atypical Presentation of a Rare Disease. Cureus 15(2): e34698. DOI 10.7759/cureus.34698

Lab	Value	Reference range
Hemoglobin (g/dL)	9.9	11.1-15.9
MCV (fL)	75	79-97
Iron saturation (%)	7	15-55
Iron (mg/dL)	33	27-159
Ferritin (ng/mL)	4	15-150
Immunoglobulin A, quantitative (mg/dL)	96	87-352
Deamidated gliadin antibodies, IgA (U)	4	0-19
Deamidated gliadin antibodies, IgG (U)	9	0-19
T-transglutaminase (tTG) IgA (U/mL)	<2	0-3
T-transglutaminase (tTG) IgG (U/mL)	3	0-5

TABLE 1: Initial laboratory values

Abbreviations: g: grams; dL: deciliter; MCV: mean corpuscular volume; fL: femtoliters; mg: milligrams; ng: nanograms; U: units; Ig: immunoglobulin.

In the gastroenterology clinic, she noted intermittent mild periumbilical cramping but denied melena or hematochezia. She denied fevers, chills, weight loss, dysphagia, or diarrhea. She had no history of non-steroidal anti-inflammatory drugs or alcohol use. She had a copper intrauterine device and was not on any medications. She had no notable family history. Vital signs were normal. A physical exam was normal. Notable negative labs included *Helicobacter pylori*, anti-parietal cell and intrinsic factor antibodies, and a celiac panel. A complete metabolic panel, fat-soluble vitamins, and immunoglobulin levels were normal.

EGD revealed diffusely nodular and erythematous gastric mucosa (Figure 1). Random gastric biopsies demonstrated marked friability of the gastric mucosa with subsequent bleeding resulting in famotidine 40 milligrams (mg) intravenously given intra-procedurally. Pathology revealed CG with deposition of a thick band of collagen under the surface epithelium infiltrated by a few eosinophils, and the absence of oxyntic glands and parietal cells (Figure 2). *Helicobacter pylori* testing was negative. Colonoscopy with intubation of the terminal ileum was unremarkable.

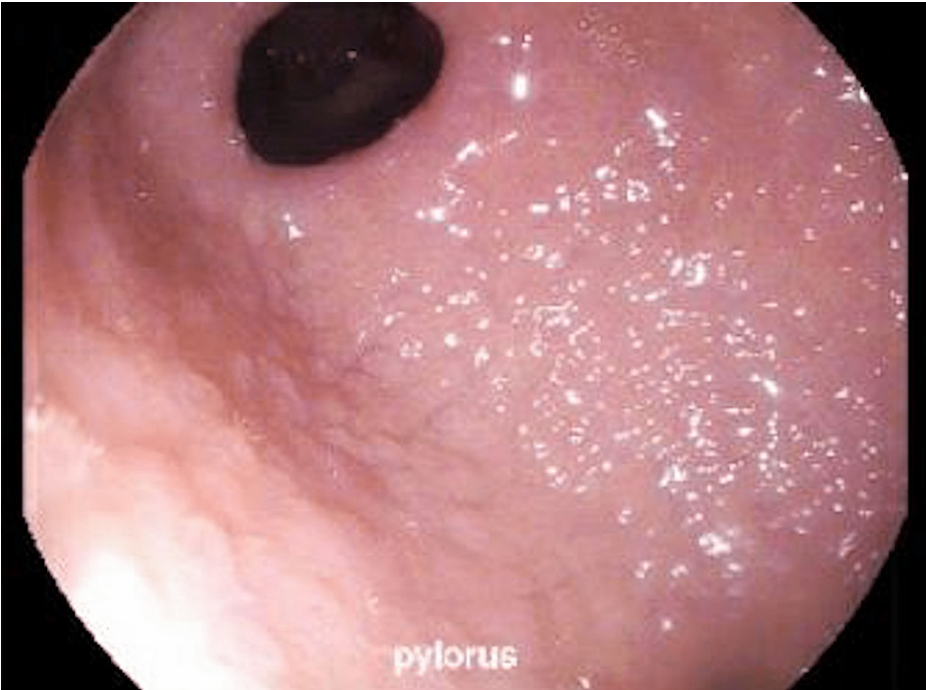


FIGURE 1: Diffusely nodular gastric mucosa seen in the pre-pyloric region on esophagogastroduodenoscopy

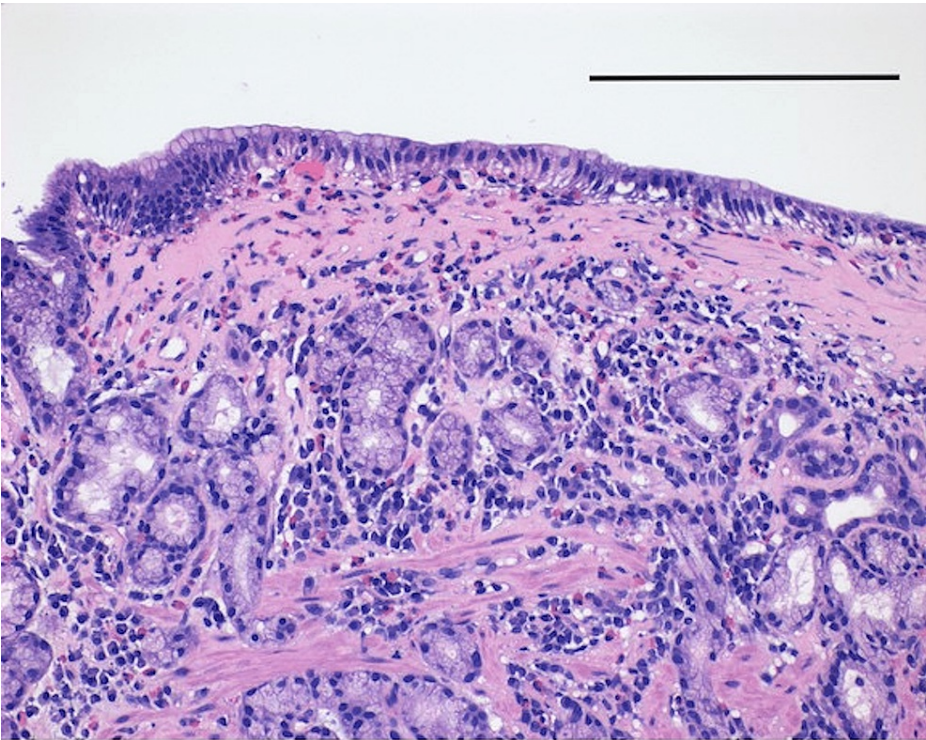


FIGURE 2: Hematoxylin and eosin staining of gastric body biopsy, 20x microscope objective

A biopsy from the gastric body shows a complete loss of oxyntic glands and deposition of a thick band of collagen under the surface epithelium infiltrated by a few eosinophils. Scale bar = 0.25 millimeters.

The patient was treated with omeprazole 40 mg by mouth once a day for six weeks. In the interim, she was started on vitamin B12 supplementation. At the two-month follow-up, she noted occasional sporadic

abdominal cramping but was otherwise well. Repeat hemoglobin was 10.1 g/dL, and ferritin was 5 ng/mL. She was started on ferrous sulfate 325 mg by mouth once a day.

Discussion

CG is a rare inflammatory condition of unknown etiology defined histologically by subepithelial deposition of collagen bands $\geq 10 \mu\text{m}$ in the lamina propria. Theories of the pathogenesis of CG include inflammation and autoimmune injury [4]. It is hypothesized that subepithelial fibroblasts release collagen in response to chronic inflammation [3]. CG has been associated with lymphatic disorders of the GI tract such as lymphocytic gastritis, celiac disease, and duodenal intraepithelial lymphocytosis [2].

Adults with CG typically present with diarrhea, often attributed to concurrent collagenous sprue or collagenous colitis, and may have coexisting autoimmune diseases [2]. Children more commonly present with abdominal pain and anemia, with inflammation typically limited to the stomach [5]. The etiology of anemia in CG may be associated with the friability of the gastric lining from dilated capillaries entrapped in the collagen bands [3]. Endoscopic findings characteristically include nodularity in the gastric body; however, there are variable findings [1]. Some reported cases of CG suggest obtaining biopsies from gastric mucosa with cobblestone appearance may be of higher diagnostic yield [6].

Three distinct inflammatory patterns are appreciated: a lymphocytic gastritis-like pattern, an eosinophil-rich pattern, and an atrophic gastritis pattern [7]. There are no standard therapies or surveillance recommendations, and long-term significance, including malignant potential in the setting of chronic inflammation, remains unclear. Reports of this diagnosis have shown the condition to relapse and persist for years in some cases [4,8]. All patients reported with CG were treated with acid suppression, either a proton pump inhibitor or an H2 blocker, as in our case. Some patients reported in the literature were treated with courses of steroids, with little to no improvement [3]. A recent study utilized topically targeted budesonide (TTB) for the treatment of CG, with 89% demonstrating a clinical response and 88% demonstrating a histologic response to TTB [9].

Our patient's symptoms and endoscopic findings are consistent with previously described pediatric, but not adult, cases of CG, yielding insight into the variable clinical presentation of this rare disease. A recent review found just 60 cases of CG reported from 1989 to 2015, highlighting the importance of further reports to inform the approach toward recognition, management, and surveillance [10].

Conclusions

CG is rare, and its pathogenesis is unknown. There is a female predominance, and it commonly manifests as abdominal pain and anemia in pediatric patients. This case demonstrates an atypical presentation of CG in an adult patient with iron deficiency anemia. Typical pediatric patient endoscopy reveals a nodular appearing stomach and iron deficiency anemia hypothesized to result from bleeding superficial capillaries entrapped in collagen. Adults tend to present more commonly with chronic watery diarrhea attributed to a strong association with collagenous colitis. To date, there is no standard therapy, and the long-term significance of this disease is unclear. Further studies are warranted to elucidate the pathogenesis and long-term course of this disease.

Additional Information

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Colletti RB, Trainer TD: Collagenous gastritis. *Gastroenterology*. 1989, 97:1552-5. [10.1016/0016-5085\(89\)90403-4](https://doi.org/10.1016/0016-5085(89)90403-4)
2. Genta RM, Turner KO, Morgan CJ, Sonnenberg A: Collagenous gastritis: epidemiology and clinical associations. *Dig Liver Dis*. 2021, 53:1136-40. [10.1016/j.dld.2021.03.010](https://doi.org/10.1016/j.dld.2021.03.010)
3. Kori M, Cohen S, Levine A, Givony S, Sokolovskaia-Ziv N, Melzer E, Granot E: Collagenous gastritis: a rare cause of abdominal pain and iron-deficiency anemia. *J Pediatr Gastroenterol Nutr*. 2007, 45:603-6. [10.1097/MPG.0b013e31803cd545](https://doi.org/10.1097/MPG.0b013e31803cd545)
4. Pulimood AB, Ramakrishna BS, Mathan MM: Collagenous gastritis and collagenous colitis: a report with sequential histological and ultrastructural findings. *Gut*. 1999, 44:881-5. [10.1136/gut.44.6.881](https://doi.org/10.1136/gut.44.6.881)
5. De Ronde O, Delos M, Jespers S, Gillain C, De Ronde T: Collagenous gastritis : about two paediatric cases and literature review. *Acta Gastroenterol Belg*. 2020, 83:41-5.
6. Liao CH, Saddik M, Ip S: An unusual case of collagenous gastritis: incidental finding in a patient presenting

- with dysphagia. Case Rep Gastrointest Med. 2019, 2019:5427085. [10.1155/2019/5427085](https://doi.org/10.1155/2019/5427085)
7. Arnason T, Brown IS, Goldsmith JD, et al.: Collagenous gastritis: a morphologic and immunohistochemical study of 40 patients. Mod Pathol. 2015, 28:533-44. [10.1038/modpathol.2014.119](https://doi.org/10.1038/modpathol.2014.119)
 8. Brain O, Rajaguru C, Warren B, Booth J, Travis S: Collagenous gastritis: reports and systematic review. Eur J Gastroenterol Hepatol. 2009, 21:1419-24. [10.1097/MEG.0b013e32832770fa](https://doi.org/10.1097/MEG.0b013e32832770fa)
 9. Choung RS, Sharma A, Chedid VG, Absah I, Chen ZE, Murray JA: Collagenous gastritis: characteristics and response to topical budesonide. Clin Gastroenterol Hepatol. 2022, 20:1977-85.e1. [10.1016/j.cgh.2021.11.033](https://doi.org/10.1016/j.cgh.2021.11.033)
 10. Kamimura K, Kobayashi M, Sato Y, Aoyagi Y, Terai S: Collagenous gastritis: review. World J Gastrointest Endosc. 2015, 7:265-73. [10.4253/wjge.v7.i3.265](https://doi.org/10.4253/wjge.v7.i3.265)