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Gastric Inverted Hamartomatous Polyp with Active *H. Pylori* Gastritis and Anemia: A Rare Presentation

Case Report

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Abstract

Background: Gastric inverted hamartomatous polyps are rare polyps constituting less than one percent of all the gastric polyps and characterized by an inverted growth pattern of benign gastric mucosal components into the submucosa. Gastric inverted hamartomatous polyps are known to have malignant potential. Because of their rarity, gastric inverted hamartomatous polyps can pose a histological and clinical challenge.

Case presentation: We present a case of a 54-year-old female with gastric inverted hamartomatous polyp with underlying active H. pylori gastritis manifesting as symptomatic anemia and melena. Esophagogastroduodenoscopy showed a 3 cm pedunculated gastric polyp on the lesser curvature with dilated vessels and bleeding on its surface. Due to its long stalk, the polyp was initially found prolapsing through the pylorus but returned spontaneously into the intragastric position (ball valve phenomenon). The polyp was resected with a hot snare and retrieved. Histology revealed an endophytic growth of benign hyperplastic glands with variable cystic dilation into the submucosa with focal benign smooth muscle proliferation. Associated focal erosion and active H. pylori gastritis, confirmed by immunohistochemistry were also identified. The patient was discharged on quadruple H. pylori therapy with a follow-up plan for repeat esophagogastroduodenoscopy in two months.

Conclusion: GIHP may be symptomatic presenting as anemia, gastrointestinal obstruction, or involved by H.pylori infection. The pathogenesis of GIHP is still unclear due to rare, reported cases. H. pylori gastritis could be a contributing factor in the pathogenesis of GIHP and warrants further studies.

Keywords: Gastric inverted polyp; H. pylori; Anemia; Ball valve mechanism; Histology

Abbreviations: GIHP: Gastric Inverted Hamartomatous Polyp

Introduction

Gastric polyps are frequent findings on endoscopy. These are usually asymptomatic and incidentally found on endoscopy [1]. Some of these polyps may present with bleeding, obstruc-tive symptoms, anemia, and pain [2]. Fundic gland polyps, hyperplastic polyps, and adenomas are the most common ones [3-5]. We report a histologically distinct case because, in contrast to the exophytic configuration of hamartomatous polyps, our patient had an endophytic polyp and thus called a Gastric inverted hamartomatous polyp (GIHP). GIHP are rare polyps constituting less than one percent of all the gastric polyps and characterized by an inverted growth pattern of benign gastric mucosal components into the submucosa and smooth muscle of the submucosa [6-8]. Although most GIHP are found incidentally, our case manifested as severe anemia and melena and was successfully managed using endoscopic resection. GIHP are known to have malignant potential. Because of their rarity, GIHP can pose a histological and clinical challenge. We present a case of GIHP with underlying active H. pylori gastritis manifesting as symptomatic anemia and melena. The co-existence of H. pylori gastritis and GIHP has rarely been reported which may have a contribution in the pathogenesis of GIHP.

Case Presentation

A post-menopausal 54-year-old female presented to emergency room with nausea, abdominal pain, and melena. On examination, she was tachycardic and borderline hypotensive. Lab findings were significant for a hemoglobin of 4.6 g/dl. CT angiogram of abdomen and pelvis were negative.

Esophagogastroduodenoscopy after initial stabilization showed a 3 cm pedunculated gastric polyp on the lesser curvature with dilated vessels on its surface and stigmata of recent bleeding (Figure 1) with an otherwise normal esophagus, and duodenum. Due to its long stalk, the polyp was initially found prolapsing through the pylorus but returned spontaneously into the intragastric position (ball valve phenomenon). The polyp base was sequentially injected with epinephrine, endoclips were prophylactically applied and then the polyp was resected with a hot snare and retrieved.

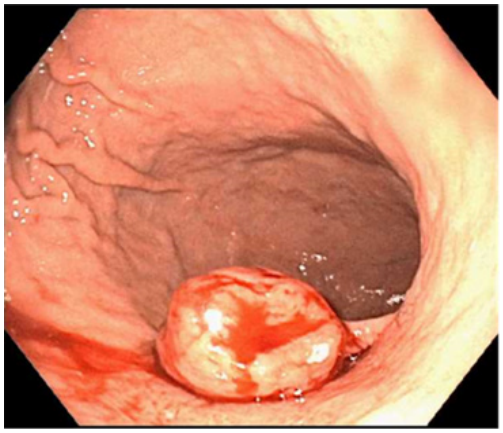

Figure 1: Endoscopy showing pedunculated gastric polyp with a stalk (arrow) and dilated vessels with surface bleeding.

Histology revealed an endophytic growth of benign hypertrophic glands with variable cystic dilation into the submucosa (Figure 2A) with focal benign smooth muscle proliferation (Figure 2B). Cystically dilated duct-like structures without accompanying glands were also present. No atypical features were identified. An area of associated focal erosion (Figure 2C) with active H. pylori gastritis was seen. H. pylori was confirmed by immunohistochemistry (Figure 2D). The patient was discharged on quadruple H. pylori therapy with a follow-up plan for repeat esophagogastroduodenoscopy in two months. However, the patient did not return for follow-up even after a year of polypectomy.

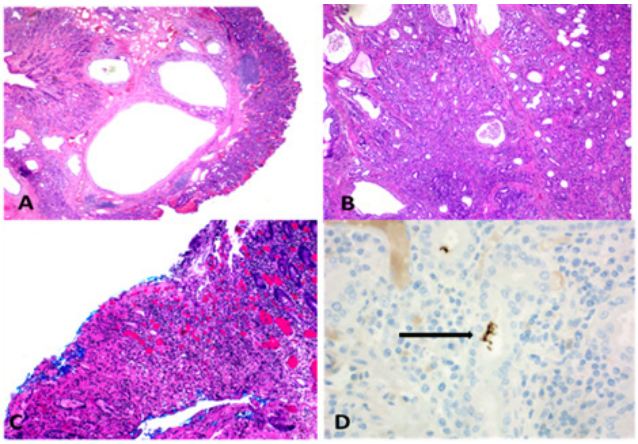

Figure 2: H&E image showing endophytic submucosal growth of benign hypertrophic glands with variable cystic dilation (A;10x), with benign smooth muscle proliferation in the stroma of the polyp (B; 20x), and focal surface erosions (C; 40x). Immunohistochemical stain for H. pylori organism is positive (D; arrow).

Discussion

Morphologically, benign gastric polyps can either be protruding or inverted. Protruding gastric polyps are more common, while inverted polyps are rare [9]. GIHPs are usually incidental findings as they are asymptomatic, but they can occasionally present as intestinal obstruction or as secondary anemia due to chronic blood loss. Previous studies have not shown any gender predominance [10]. Historically, the diagnosis is difficult without pathological evaluation due to its rarity and potential resemblance with ectopic pancreatic tissue on endoscopic evaluation [11]. Only a few cases of GIHP are reported in English literature. Among the extremely few reported GIHP cases, only one case presented with severe anemia [9]. Our case is the second report of GIHP with severe anemia. Our patient's workup revealed severe anemia (hemoglobin 4.6 g/dl) without significant past medical history. Our case showed coexistence of H. pylori infection with GIHP that is rarely reported in literature. Another study by Yamashita et al. documented association of H. pylori with GIHP in 3 of 4 cases [12]. There is a possibility that other researchers overlooked this association and did not document it. Only one other previously documented case presenting with ball valve phenomenon is reported in the literature [13]. Based on history and endoscopic findings, the possible cause of anemia could have been blood loss due to chronic mechanical trauma to the dilated veins on the polyp surface caused by the ball valve phenomenon.

GIHP usually present as a solitary submucosal mass on endoscopy [14]. Two types of GIHPs are identified, submucosal tumor type, lacking a stalk, and polyp type, which has a stalk similar to our case [10]. Due to rarity and inverted growth pattern as opposed to exophytic growth pattern, GIHP poses a diagnostic challenge and requires pathological evaluation for correct diagnosis. GIHP may resemble a subepithelial tumor, a malignant neoplasm, or may mimic ectopic pancreas on endoscopy, hence, histopathologic evaluation becomes essential [9,11]. Histologically, GIHP are characterized by submucosal growth of cystically dilated hyperplastic glands lined by foveolar, fundic or pyloric gland type epithelium accompanied by smooth muscle proliferation and ectopic duct-like structures [11,12,15-18]. Proliferation of fibroblasts and neu¬ral elements can be seen as well [14]. Certain features have been suggested on endoscopic ultrasound imaging, such as hyperechoic lesions with hypoechoic spots, which might be suggestive of GIHP [14].

Pathogenesis of GIHP remains controversial due to the rarity of cases. One hypothesis suggests that GIHP occurs due to downward mucosal growth through defects in the muscularis mucosa caused by repeated erosions [19]. However, another hypothesis advocates the upward growth of submucosal hamartomatous components to the mucosal surface [20,21]. In the present case there is a possibility that erosions caused by H. pylori infection created defects that may have contributed to pathogenesis of GIHP. However, more studies are required to know if definite association of H. pylori with GIHP exists. GIHP may be associated with synchronous or metachronous gastric carcinoma [18,22,23]

Large GIHP can show dysplastic or cancerous transformation in about twenty percent of the cases [24]. TP53 dysregulation may have a significant role in the malignant transformation of GIHP as suggested by Kono et al. [22]. Additionally, multifocal adenocarcinomas may be randomly distributed across different regions of a GIHP. Thus, a negative biopsy is not reliable in excluding the presence of dysplasia or adenocarcinoma. Therefore, GIHP should be completely resected with negative margins followed by a thorough histopathologic examination [23]. GIHP larger than 20 mm are recommended to be treated with an en-bloc resection with laparoscopic wedge resection of the stomach or endoscopic submucosal dissection instead of a conventional polypectomy because GIHP has a potential for malignant transformation [10,24,25].

Conclusion

In summary, GIHP may be symptomatic presenting as anemia,

gastrointestinal obstruction, or involved by H. pylori infection. The pathogenesis of GIHP is still unclear due to rare, reported cases. Its submucosal location poses diagnostic and management challenges. Considering a twenty percent risk of malignant transformation of GIHP, pathologic evaluation is essential to make an accurate diagnosis and guide management and follow-up. H. pylori gastritis could be a contributing factor in the pathogenesis of GIHP and warrants further studies. We recommend to meticulously search for H. pylori in all cases of GIHP and see if an association exists that may help us understand the pathogenesis of GIHP.

Declarations

Submission declaration and verification: Parts of this article were previously presented as a poster at ACG (American College of Gastroenterology) 2021 Annual Scientific Meeting & Postgraduate Course at Las Vegas on October 24, 2021, and the abstract was published as a Clinical vignette in American Journal of gastroenterology.

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