

Gastritis cystica profunda in a previously unoperated stomach: A case report

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Abstract

Gastritis cystica profunda is a relatively rare disease, usually observed at anastomotic sites in stomachs of patients that have undergone gastric procedures. We present the rare case of an elevated lesion in the anterior wall of the gastric antrum of a 43-year-old Chinese woman who had never undergone gastric surgery and had no gastrointestinal tract symptoms. Although the physical examination and laboratory data showed no abnormalities, endoscopic ultrasonography revealed an anechoic cystic structure. Abdominal

computed tomography and magnetic resonance imaging showed the gastric wall of the greater curvature of the antrum was markedly and irregularly thickened, and mild to moderate enhancement was observed around the lesion with no enhancement in the central portion, suggestive of a gastrointestinal stromal tumor. The patient underwent a distal gastric resection of the 2.5 cm × 1.5 cm lesion. A postoperative pathologic examination showed dilated cystic glands in the muscularis mucosa and submucosal layers and erosion of the mucosal surface of the tumor, confirming the diagnosis of gastritis cystica profunda without malignancy.

Key words: Gastritis cystica profunda; Hyperplastic polyp; Stomach

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Core tip: Gastritis cystica profunda is a rare disease characterized by polypoid hyperplasia and cystic dilatation of the gastric glands extending into the submucosa of the stomach. It is typically only found in the stomach after gastric surgery, however, we encountered a rare case of gastritis cystica profunda in a 43-year-old Chinese woman who had never undergone gastric surgery. The elevated lesion in the anterior wall of the gastric antrum was discovered by endoscopic ultrasonography, and marked and irregular thickening of the gastric wall was observed with computed tomography and magnetic resonance imaging.

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INTRODUCTION

Gastritis cystica profunda (GCP) is a relatively rare, benign disease characterized by polypoid hyperplasia and cystic dilatation of the gastric glands that extend into the submucosa of the stomach^[1]. GCP can present as upper gastrointestinal symptoms, such as upper abdominal pain, acid reflux, nausea, anorexia, or bleeding, though some patients may experience no symptoms at all^[2], and can cause massive upper gastrointestinal hemorrhage and gastric outlet obstruction in some cases^[3-5]. GCP usually emerges as giant gastric folds, submucosal tumors, or isolated polyps and typically occurs at anastomotic sites of previous surgeries^[6]. Here we report a unique case of GCP in an asymptomatic patient who had no history of gastric surgery.

CASE REPORT

A 43-year-old Chinese woman was admitted to our hospital for an abnormality of the stomach that was discovered during a routine medical check-up. Gastroscopy revealed a mass-like lesion protruding into the gastric lumen (Figure 1). She had no gastrointestinal symptoms and no history of abdominal surgery. Physical examination and laboratory data showed no abnormalities. Endoscopic ultrasonography revealed an anechoic cystic structure in the irregularly thickened stomach wall of the greater curvature of the antrum (Figure 2). Additional abdominal computed tomography and magnetic resonance imaging also showed that the gastric wall was markedly and irregularly thickened, and enhanced scanning showed mild to moderate enhancement around the lesion, suggestive of a gastrointestinal stromal tumor (Figure 3).

A distal gastric resection (Billroth I) was performed to remove the 2.5 cm × 1.5 cm tumor, which had an eroded mucosal surface. A histologic examination revealed dilated cystic glands in the muscularis mucosa and submucosa (Figure 4), consistent with a diagnosis of GCP without malignancy.

DISCUSSION

The etiology and pathogenesis of GCP have not been established, however, lesions are often accompanied by severe diffuse chronic gastritis^[7] and *Helicobacter pylori* infection^[8]. It is thought that inflammation causes the erosion of the muscularis mucosa, consequently leading to the formation of submucosal cysts. The potassium voltage-gated channel subfamily E member 2 (*KCNE2*), an essential subunit of apical potassium channels in parietal cells, may also be implicated, as knockout mice exhibit a severe gastric preneoplastic phenotype^[9], and the expression of *KCNE2* is negatively correlated with gastric cancer formation in humans^[10]. GCP is also considered to be



Figure 1 Gastroscopy. An elevated nodular lesion (arrows) with smooth surfaces was observed in the anterior portion of the gastric antrum.

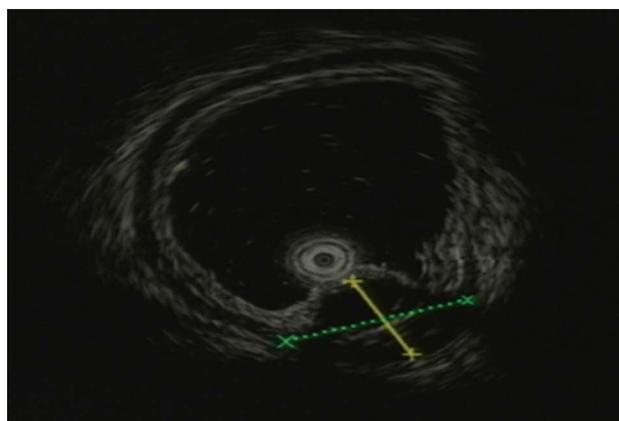


Figure 2 Endoscopic ultrasonography. An anechoic mass with an irregularly thickened wall was observed in the submucosal lining of the stomach.

precancerous^[8], as a few cases have been associated with gastric cancers^[11-13] and gastric carcinoma with lymphoid stroma^[14]. There is also evidence that the development of GCP is influenced by infection with the Epstein-Barr virus, which was observed in both dysplastic and carcinoma areas^[14], and is more prevalent in gastric cancer tissues from patients with GCP^[11].

As GCP is typically found at sites of previous surgeries, it was suggested that mucosal injury caused by surgery or the suture technique itself promotes mucosal prolapse and herniation of glands into the submucosa^[15,16]. Interestingly, the patient in the present case had no history of abdominal surgery, thus additional factors must have contributed. Mukaisho *et al*^[17] found GCP-like mucosal changes in an animal model of duodenal reflux, of which 76.2% developed adenocarcinomas at week 80. Repeated erosion of the stomach lining may give rise to heterotopic cysts, the surface mucosa of which may be more prone to further erosion. Additionally, the regeneration of mucosal epithelium may lead to the development of carcinoma^[8]. Indeed, GCP lesions may be precancerous, as Ochiai *et al*^[13] found that cell kinetics

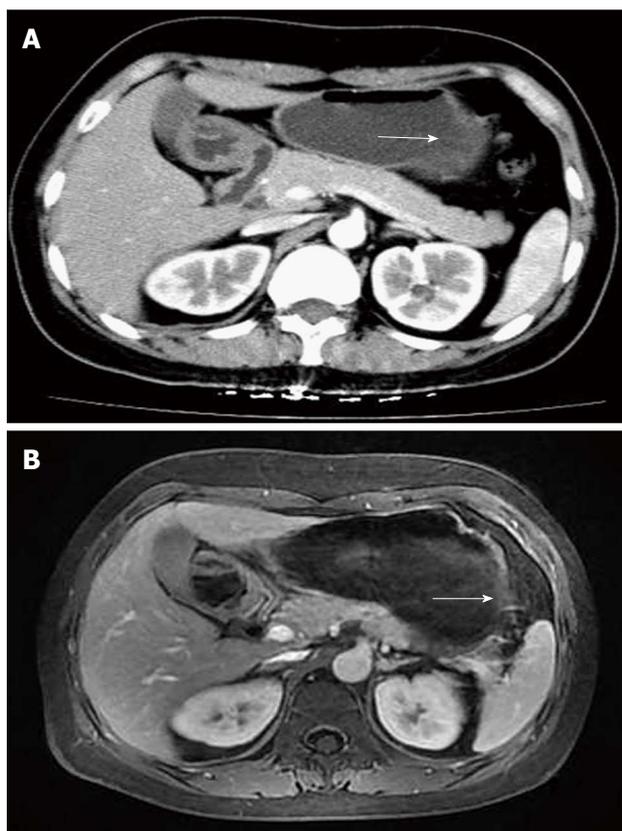


Figure 3 Radiology. A: Computed tomography; B: Magnetic resonance imaging of the patient in a prone position showed that the gastric wall of the stomach at the greater curvature of the antrum was markedly and irregularly thickened, with mild to moderate enhancement (arrow).

were accelerated and gene mutations were enhanced in GCP lesions, and foveolar glands in GCP can be hyperplastic and highly proliferative^[18]. Therefore, patients with non-malignant GCP should continue to be monitored.

The main treatment for GCP is surgical removal of the lesion, while minimizing bile reflux into the stomach. Due to the premalignant nature of the disease, histopathologic evaluation of the lesion is recommended. In addition, GCP recurrence after surgical resection has been reported^[19]. Therefore, careful long-term follow-up is needed. The case reported here demonstrates that GCP is not limited to patients who have previously undergone gastric surgery, and should therefore be considered for cases with abnormalities of the stomach mucosa.

COMMENTS

Case characteristics

A 43-year-old Chinese woman who had no history of gastric surgery presented with an abnormality of the stomach by gastroscopy during a routine medical check-up.

Clinical diagnosis

Endoscopic ultrasonography revealed an anechoic cystic structure in the irregularly thickened stomach wall in the greater curvature of the antrum.

Laboratory diagnosis

Complete blood count, serum tumor markers (carcinoembryonic antigen, alpha-

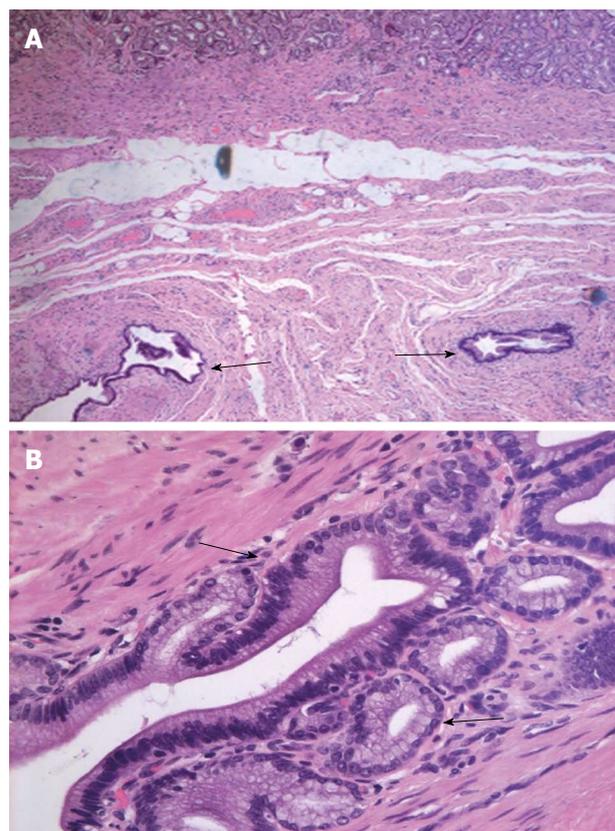


Figure 4 Histology. Hematoxylin and eosin staining of nodular lesion specimens showed dilated cystic glands (arrows) in the A: Muscularis mucosa ($\times 50$ magnification); B: Submucosal layers ($\times 400$ magnification).

fetoprotein, carbohydrate antigen 19-9), metabolic panel and liver function test were within normal limits.

Imaging diagnosis

Abdominal computed tomography and magnetic resonance imaging showed the gastric wall on the greater curvature of the antrum was markedly and irregularly thickened; enhanced scanning showed mild to moderate enhancement of the lesion periphery, with no enhancement in the central portion of the lesion.

Pathological diagnosis

Postoperative pathologic examination showed a 2.5 cm \times 1.5 cm lesion with an eroded mucosal surface, confirming the diagnosis of gastritis cystica profunda (GCP) without malignancy.

Treatment

The patient underwent a distal gastric resection (Billroth I).

Related reports

GCP usually emerges as giant gastric folds, submucosal tumors, or isolated polyps at the anastomotic sites of previous surgeries. GCP is also more prevalent in patients with gastric cancer, and can be considered as a precancerous lesion.

Term explanation

GCP is a rare disease characterized by polypoid hyperplasia and cystic dilatation of the gastric glands extending into the submucosa of the stomach.

Experiences and lessons

Although GCP is typically only seen in stomachs of patients who have undergone gastric procedures, it can also develop in stomachs of patients with no history of abdominal surgery.

Peer-review

In this article, the authors report a rare case of GCP that developed in that stomach of patient who had not previously undergone gastric surgery. The authors also review the clinical pathologic features of GCP. It is a case report that is of interest to the readership.

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