Clinical Case Report

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Glomus tumor of the stomach

A case report

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Abstract

Rationale: Glomus tumors (GTs) are a rare disorder originating from the glomus of the anastomoses of small arteries, usually occurring in the subungual region of the fingertips or toes and seldom occurring in the stomach. We unintentionally found a case of a gastric glomus tumor (GGT) without any upper abdominal discomfort. The diagnosis of this disease was mainly by immunohistochemistry.

Patient concerns: The patient presented to our hospital with intermittent right abdominal pain for 1 month. Abdominal computed tomography showed a nodular enhancement lesion in the gastric antrum.

Diagnoses: The patient was diagnosed with an ileocecal tumor and a gastric stromal tumor.

Interventions: Surgical resection of the ileocecal and gastric tumors was performed.

Outcomes: Pathologic examination of gastric masses revealed GT. The operation was effective, and the patient was discharged from our hospital 7 days after surgery. Upon follow-up at 3 months, the patient was asymptomatic.

Lessons: GTs are submucosal tumors rarely found in the stomach. Surgical resection is a good choice of treatment. The GGT lacked specific clinical and imaging features, and immunohistochemistry was essential in the diagnosis of GGT.

Abbreviations: EUS = endoscopic ultrasound, GGT = gastric glomus tumor, GIST = gastrointestinal stromal tumor, GT = glomus tumor, IHC = immunohistochemistry.

Keywords: glomus tumor, immunohistochemistry, stomach

1. Introduction

A glomus tumor (GT) stemming from the neuromyoarterial canal or glomus body is a rare, benign neoplastic lesion of mesenchymal tissue. Most GTs are commonly found in the peripheral soft tissue and extremities: these tumors can also occur anywhere in the body.[1,2] A GT growing in the stomach is rare, and mainly distributed in the antrum.[3] The first report of a case of gastric glomus tumors (GGTs) was by Kay et al in 1951[4]: since then, only a few cases have been reported.[5] Patients with GGTs are usually identified by clinical symptoms: including upper abdominal pain, vomiting, bleeding, and perforation: some are also occasionally found by computed tomography or endoscopic ultrasound (EUS).[6,7]

2. Case report

A healthy 51-year-old woman presented with a history of a month of intermittent right abdominal pain. Abdominal computed tomography showed a thickening of the ileocecal wall, a slight narrowing of the intestine, and a 1.3 cm nodular enhancement lesion in the gastric antrum (Fig. 1A). Analgesic electronic colonoscopy showed an area measuring approximately 2.0 × 2.0 cm with irregular raised tumors in the ileocecal region. The tumor surface was nodular, with multiple cord-like erosions. The patient was physically fit, denied having any disease, and had no upper abdominal discomfort. The preoperative diagnosis was an ileocecal tumor and a gastric stromal tumor. Due to abdominal adhesions, the patient was not a candidate for laparoscopic surgery: hence, she underwent laparotomy. The patient underwent surgical removal of the ileocecal and gastric tumors (Fig. 1B). In the muscle layer of the resected gastric specimen, we found a tumor with a diameter of approximately 1.0 × 1.0 cm. To identify the nature of the gastric neoplasm during the operation, intraoperative frozen section was necessary. The intraoperative frozen section findings showed small, uniformly round tumor cells without nuclear pleomorphism and no mitotic figures in the stomach muscle (Fig. 2). After the operation, immunohistochemistry results demonstrated the typical pattern of GT. Immunohistochemistry stains showed that the tumor was positive for calponin, SMA, vimentin and syn and negative for AE1/AE3 and CgA (Fig. 3). The Ki-67 index was 1%. The gastric tumor was eventually diagnosed as GT.

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Ethical review: The study protocol was approved by the Ethics Committee of the First Hospital of Jilin University. Written informed consent was obtained from the patient for publication of this case report.

The authors have no conflicts of interest to disclose.

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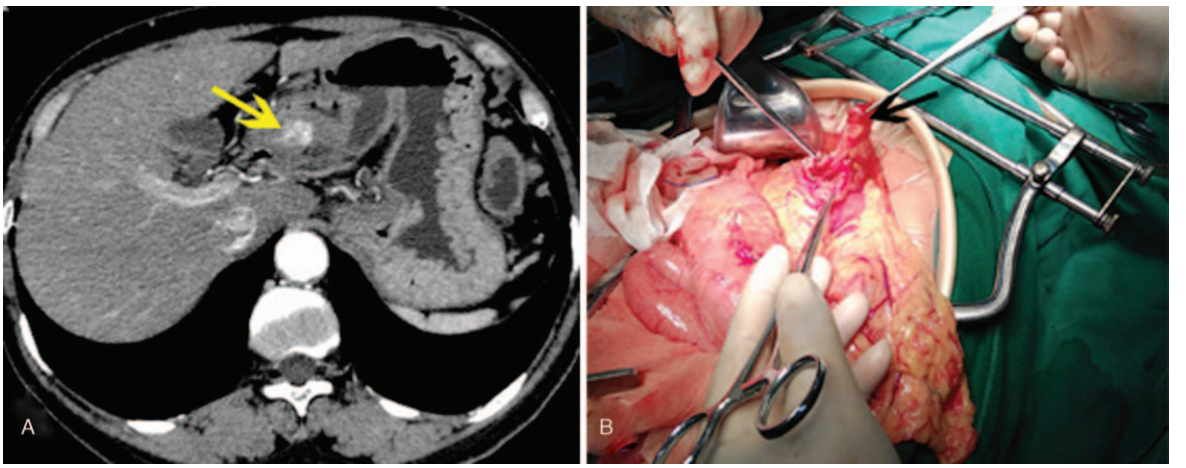

Figure 1. (A) Enhanced computed tomography (CT) abdomen shows a high-density tumor at the antrum of the stomach (arrow). (B) Glomus tumor in wedge resection (arrow).

The effectiveness of the operation was excellent. The patient's postoperative course was good, and she was discharged from our hospital 7 days postsurgery. At follow-up 3 months after surgery, the patient had no complaints.

3. Discussion

GGTs are approximately 1% of all gastrointestinal soft tissue tumors. GGTs are often difficult to distinguish from gastrointestinal stromal tumors (GISTs), with only 1% of GIST diagnoses being gastric GT. GGTs occur predominantly in women (female: male = 3:1) and usually occur between 28 and 79 years of age.[6] GGTs are mainly found in the antrum, and the tumor size is generally between 0.8 and 11 cm.[8] Because of the lack of characteristic clinical symptoms of GGT, preoperative diagnosis is difficult. In this case, a GGT was found with no symptoms.

Preoperative diagnosis mainly depends on computed tomography and EUS.[7,9,10] In enhanced computed tomography, the tumor shows dense homogeneous enhancement on arterial-phase scans and persistent enhancement on venous-phase scans. Compared with GIST, its density is lower and there is no prolonged enhancement in the delayed phase.[11] EUS can indicate the origin of the tumor, often presenting as a hypoechoic mass located in the third and/or fourth layer of the gastric wall. EUS-guided fine-needle aspiration biopsy is effective in the identification of gastric submucosal neoplasms.[10] Histologically, gastric submucosal neoplasms are composed of an admixture of 3 components: small, round, uniform epithelioid cells, often with punched-out nuclei and sharply defined cytoplasmic borders; small, capillary-sized vessels, surrounded by glomus cells; and smooth muscle bundles sometimes associated with thick-walled vessels.[12] Additionally, this tumor contains hyalinized stroma. Therefore, histopathological examination is the necessary for accurate diagnosis of GGTs. Immunohistochemistry (IHC) confirms the diagnosis of GT when the cell staining of smooth muscle actin and vimentin are positive, and chromogranin is negative.[10] There are other confirmatory markers including the situation in which calponin, collagen type IV Syn are positive, while desmin, cytokeratin (AE1/AE3b), S-100 protein, creatine kinase, C-KIT (CD-117), CD34, DOG1 protein (K9), chromogranin A, p53 protein, and neuron-specific enolase, are negative.[2]

Treatment of choice for GGT includes subtotal gastrectomy, wedge resection, and excision of the tumor according to the location and size. Operative treatment with a negative margin of tumor wedge resection is a good choice.[6] The frequency of

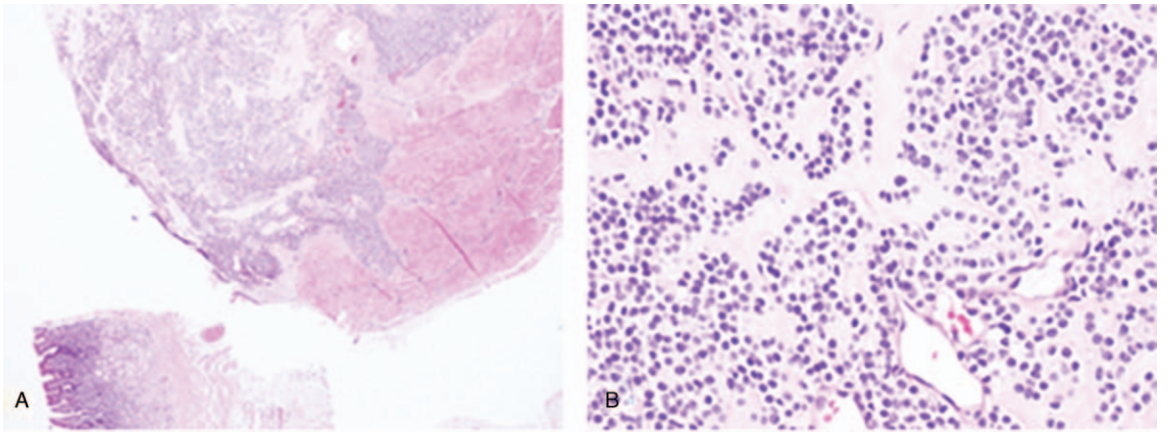

Figure 2. Intraoperative rapid pathology shows monomorphic nuclei with round nuclear contour. (A) (40×), (B) (400×).

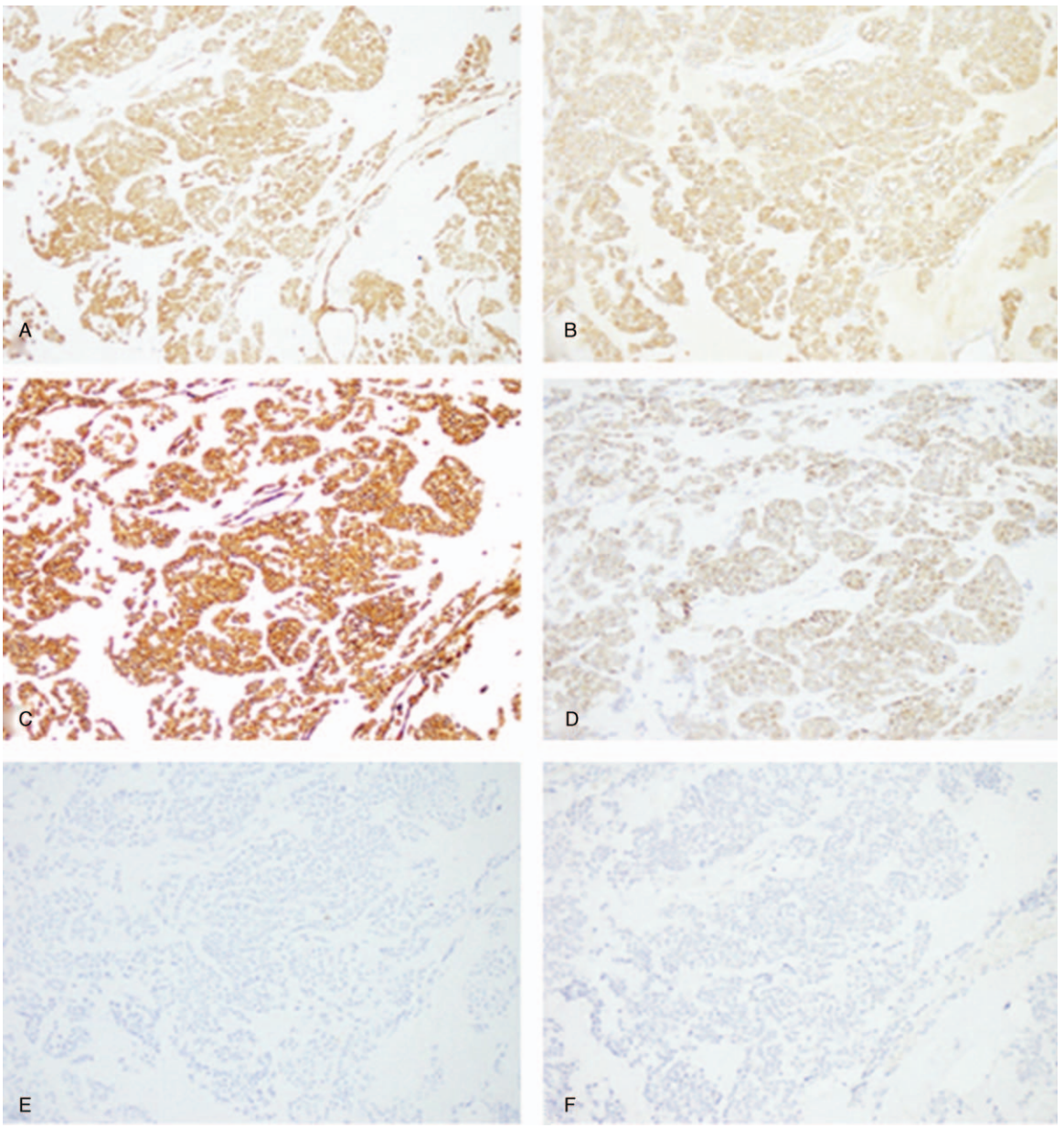

Figure 3. Immunohistochemical staining (H&E, 200×): positive for (A) calponin, (B) smooth muscle actin, (C) vimentin, (D) syn; negative for (E) AE1/AE3. (F) CgA.

laparoscopic surgery in the treatment of GGT is increasing.[7] Therefore, laparoscopic resection is a feasible choice. Our patient remained asymptomatic 3 months after surgery: gastroscopic examination revealed a healed scar.

In this case, we unintentionally found a case of GGT without any upper abdominal discomfort. Preoperative diagnosis was impossible. Since these tumors are rare, there is no complete guideline, stage, treatment or follow-up. To confirm the negative margins, we can perform a wedge resection of the tumor. The diagnosis of GT mainly is mainly by immunohistochemistry.

Author contributions

Resources: Tianyu Zhou, Donghui Cao, Limei Qu.
Software: Donghui Cao, Limei Qu.
Writing – original draft: Xueyuan Cao, Menghui Wu, Limei Qu.
Writing – review & editing: Xueyuan Cao, Menghui Wu.

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