

[CASE REPORT]

A Gastric Follicular Lymphoma Presenting as a Submucosal Tumor with a Diagnosis Determined by Endoscopic Resection

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Abstract:

We herein report the case of 74-year-old man with gastric follicular lymphoma resected by endoscopic submucosal dissection (ESD). A submucosal tumor 7 mm in diameter was detected at the gastric middle body. Endoscopic ultrasonography showed a homogenous hypoechoic tumor localized in the submucosa. The tumor was removed by ESD immediately, before further tumor growth would preclude endoscopic resection. The pathological findings indicated follicular lymphoma (FL) with negative horizontal and vertical margins. The clinical stage of FL was confirmed to be stage I by extensive work-up procedures, including contrast-enhanced computed tomography, fluorodeoxyglucose-positron emission tomography, esophagogastroduodenoscopy, and colonoscopy. The patient remains in complete remission without any treatment.

Key words: gastric follicular lymphoma, endoscopic submucosal dissection

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Introduction

Gastrointestinal stromal tumor (GIST), leiomyoma, schwannoma, lipoma, ectopic pancreatic tumor, and duplication cyst are frequently observed as gastric submucosal tumors (SMTs) by esophagogastroduodenoscopy (EGD) (1). According to the clinical practice guidelines for gastric SMT in Japan, follow-up examinations by EGD or endoscopic ultrasonography (EUS) once or twice per year following tumor detection are recommended for gastric SMTs that measure 20 mm or less in diameter and show no signs of malignancy, such as irregular borders, ulceration, or tumor progression (2). However, we resected a small SMT by ESD. Complete resection by endoscopic submucosal dissection (ESD) was able to pathologically confirm the diagnosis of

follicular lymphoma. ESD was useful as a diagnostic modality for SMT. There have been very few reports of gastric follicular lymphoma (3). However, some cases of gastric follicular lymphoma may be misdiagnosed, as we usually conduct follow-up for small SMT-like gastric follicular lymphoma. Endoscopic resection of small gastric SMTs may aid in the accurate diagnosis.

We herein report a case of gastric follicular lymphoma diagnosed based on the pathological findings of endoscopically resected tissue.

Case Report

A 74-year-old man underwent EGD as a part of a comprehensive health checkup in April 2015. His medical history was remarkable, with early gastric cancer located in the

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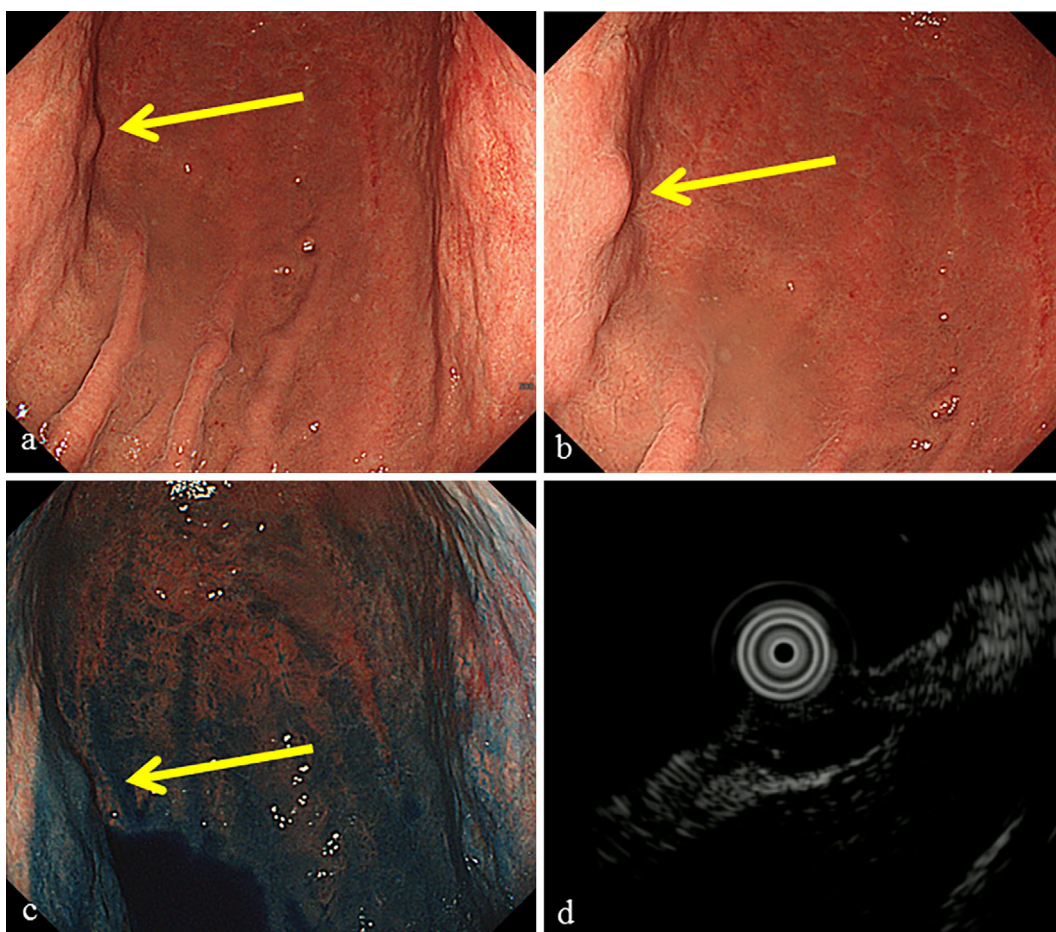


Figure 1. Findings of EGD and EUS. (a) EGD revealed a 10-mm submucosal tumor at the anterior wall of the gastric middle body (arrow). (b) The lesion was the same color as the surrounding mucosa, gently elevated, and free of irregularity or ulceration (arrow). (c) Indigo carmine revealed no border-line of the lesion. This tumor was submucosal, not epithelial. (d) Endosonography depicted the lesion as a 7×4-mm homogenous hypoechoic mass originating from the submucosal layer of the gastric wall. EGD: esophagogastroduodenoscopy, EUS: endoscopic ultrasonography

cardia [curative resection by endoscopic mucosal resection (EMR)] and an aneurysm of the thoracic aorta. He had been placed on oral drugs for hypertension, diabetes mellitus, and hyperlipidemia. He denied any symptoms at the time of the examination. Laboratory data showed an elevated level of hemoglobin A1c (6.8%; normal range, 4.3-5.9%). His serum lactate dehydrogenase, uric acid, and leukocyte, erythrocyte, and platelet counts were all normal: 216 U/L (normal range, 120-220 U/L), 6.5 mg/dL (normal range, 3-7 mg/dL), 5,300/ μ L (normal range, 3,500-8,500/ μ L), $4.38 \times 1,000,000/\mu$ L (normal range, 4.3 - $5.7 \times 1,000,000/\mu$ L), and $200 \times 1,000/\mu$ L (normal range, 32 - $36 \times 1,000/\mu$ L), respectively. His serum level of anti-*Helicobacter pylori* antibody titer was <3 U/mL (normal range, 0-9 U/mL), as he had undergone eradication therapy for *H. pylori* after EMR.

The findings of EGD and EUS are shown in Fig. 1. EGD revealed an SMT with regular borders, gentle elevation, no ulceration, and negative cushion signs. The lesion measured about 10 mm in diameter and was of the same color as the neighboring normal gastric mucosa. EUS depicted a 7×4-mm homogenous hypoechoic SMT originating from the sub-

mucosa. We did not perform a biopsy because we were able to clearly rule out an epithelial tumor by EGD or EUS. No abnormal features were noted on colonoscopy (CS). Based on these findings, we tentatively diagnosed the tumor as a small gastric leiomyoma, schwannoma, or GIST. We recommended observation and follow-up, but the patient wished to have the tumor resected. We informed the patient that ESD was only indicated for early gastric cancer and not for gastric SMT under the guidelines (4). We went on to explain, however, that it would be possible to resect the lesion by ESD, as Hoteya et al. (5) had reported that ESD was only indicated for lesions of submucosal or muscularis mucosa origin. The lesion was resected by ESD in July 2015, as soon as possible, as invasion into the muscle layer with tumor progression would preclude endoscopic removal at a later date.

Dots were marked on the exterior of the target mucosa using a DualKnifeJ™ (KD-655 L KD-655Q; Olympus, Tokyo, Japan) and electro-surgical unit (VIO 300D; ERBE Elektromedizin, Tübingen, Germany) to identify the margins of the lesion. A mucosal incision was made outside of the

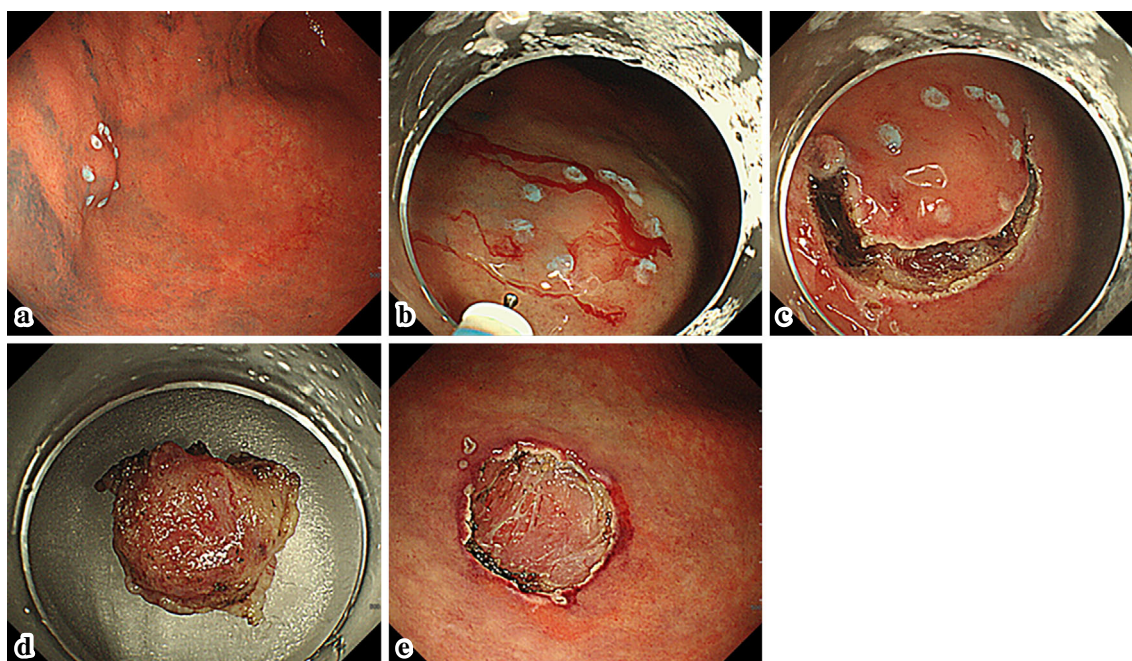


Figure 2. ESD procedure and findings. (a) Dots were marked outside the lesion. (b) Injection of glycerol into the submucosal layer. (c) Mucosal resection. (d) Resected lesion. (e) ESD-induced ulceration just after resection. ESD: endoscopic submucosal dissection

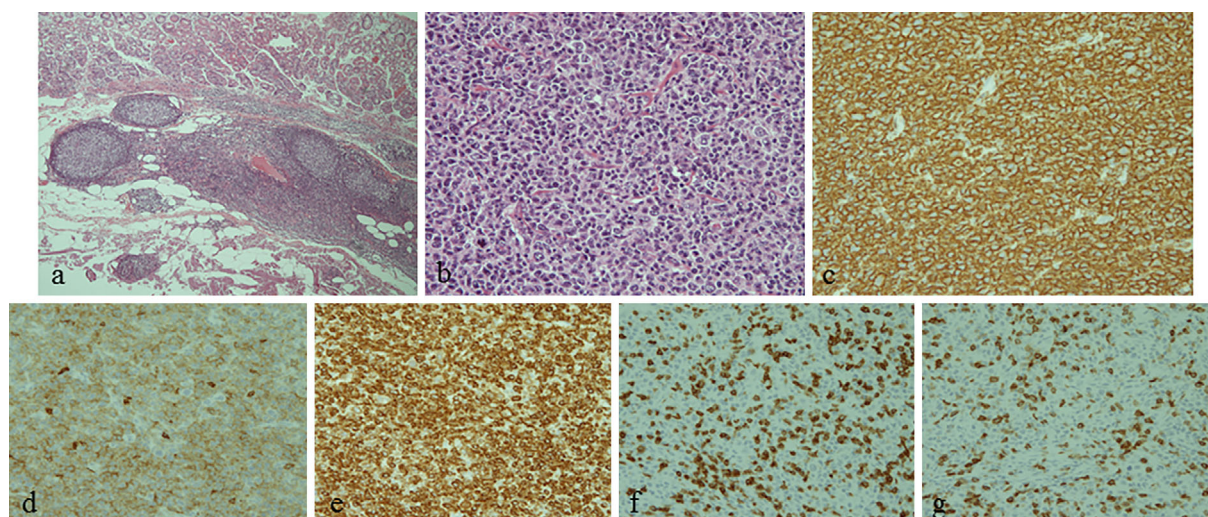


Figure 3. Histopathologic findings of SMT. (a) Neoplastic follicles were present in the submucosal layer [Hematoxylin and Eosin (H&E) staining, $\times 40$]. (b) Tumor cells comprised medium- to large-sized cells (H&E staining, $\times 400$). (c) The cells in the neoplastic follicles were positive for CD20 ($\times 400$). (d, e) Immunostaining showed positivity for CD10 and Bcl2 (f, g) and negativity for CD3 and CD5 ($\times 400$). SMT: submucosal tumor

marking dots after the patient received a submucosal injection of glycerol (10% glycerin and 5% fructose; Chugai Pharmaceutical, Tokyo, Japan) with small amounts of indigo carmine and 0.1% epinephrine via a disposable 23-gauge injection needle catheter. After the mucosal incision, a second submucosal injection was administered, and the submucosal layer was dissected. A tumor measuring 7×7 mm in diameter was resected en bloc (Fig. 2).

The horizontal and vertical margins were negative on a histological examination. Atypical lymphoid cells prolifer-

ated in a follicular pattern with abundant atypical large cells (centroblasts). Immunohistochemical staining was positive for CD20, CD79 α , bcl-2, and CD10 and negative for CD3, CD5, and CyclinD1 (Fig. 3). The Ki67 index was 5-10% in atypical lymphoid cells. Given these pathological results, we diagnosed this lesion as a follicular lymphoma of Grade 3A.

The contrast-enhanced computed tomography (CT) findings were normal, and no significant accumulation of fluorodeoxyglucose (FDG) was detected in the lymph nodes, stomach, or other internal organs by fluorodeoxyglucose-

positron emission tomography (FDG-PET). The tumor was accordingly identified as stage I by the Lugano international conference classification focusing on gastrointestinal lymphoma and as T1smNOM0 by the Paris and Ann Arbor classifications (6, 7).

The oncologist treating the patient recommended careful follow-up by CT or PET-CT, EGD, and a blood examination. No tumor recurrence was observed in the EGD examinations performed after the ESD in January, May, and November 2016. The pathological findings from biopsy specimens taken at the site of the ESD scarring indicated chronic gastritis. Follow-up CT and PET-CT conducted in January 2016 and June 2017 again showed no evidence of lymphoma recurrence, and the patient is currently undergoing outpatient follow-up without recurrence.

Discussion

We described a case of gastric follicular lymphoma resected by ESD. The patient is currently undergoing outpatient follow-up, and no recurrence has occurred.

Most cases of follicular lymphoma in the gastrointestinal tract occur in the small intestine, particularly in the second portion of the duodenum, presenting as white granular lesions (multiple small polyps) (8, 9). In contrast, follicular lymphoma of the stomach has been rarely reported, and the clinicopathological features of patients with gastric follicular lymphoma have not been sufficiently analyzed (3). Although very common as an extra-nodal lymphoma (30-40% of all cases), primary gastric lymphoma only accounts for 5% to 10% of all gastric malignancies (10, 11).

The considerable variation in the endoscopic evidence of gastric lymphoma has hindered the establishment of a unified endoscopic classification. Under the original classification reported by Nakamura et al., gastric lymphomas can be classified as superficial-type, ulcerated-type, granular-type, diffuse-type, or other (12, 13). The pathological and macroscopic types of gastric lymphoma are positively correlated. Follicular lymphomas are frequently reported to be granular-type (3, 14, 15). Endoscopically, granular-type gastric lymphoma typically appears as a soft, whitish SMT without unevenness or irregularity (6). However, the endoscopic features of our case, such as the small lesion diameter (<10 mm), are not consistent with the typical features of any gastric lymphomas enabling discrimination from other SMTs, such as leiomyoma, schwannoma, or GIST.

Only rarely can SMTs be diagnosed before a pathologic examination (7). Endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) is the best way to obtain tissue samples for a subsequent pathologic diagnosis, as SMT specimens are rarely obtained by a conventional endoscopic biopsy (1). However, the accuracy of a diagnosis by EUS-FNA is lacking. Indeed, Mekky et al. reported a definitive final diagnosis for gastric SMT in only 48.9% of cases undergoing EUS-FNA (14), and the adequacy of EUS-FNA sampling is extremely low in small gastric SMTs less than

20 mm in diameter (16).

The algorithm for the treatment of gastric SMT recommends follow-up examinations once or twice per year following tumor detection if the tumor diameter is ≤ 20 mm and there are no findings of malignancy such as ulceration, irregular borders, or tumor progression (2). Our group recommended periodic follow-up according to the guideline in the present case, as there is no ESD indication for gastric SMT, although we ultimately removed the tumor by ESD with the knowledge that any tumor growth in the future would preclude endoscopic resection. We diagnosed the lesion as a B-cell follicular lymphoma based on the findings of a pathologic study. The horizontal and vertical margins in the resected tissue were negative in our case. No evidence of recurrence was found after watchful waiting for a further two years, although the risk of recurrence remains. The guideline for SMT indicates that, if we had opted not to perform resection, a lesion of the type we resected might have progressed to a higher stage over the course of the follow-up by EGD or EUS.

The findings in the present case suggest that diagnostic resection by ESD may be an option for treating small superficial gastric SMTs localized in the muscularis mucosae or submucosa.

The authors state that they have no Conflict of Interest (COI).

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