Gastric Glomus Tumor Diagnosed by Endoscopic Ultrasound-Guided Fine-Needle Aspiration Biopsy: Report of a Case

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Abstract

A glomus tumor of the stomach is rare. It is difficult to diagnose the tumor before surgery by only endoscopic biopsy and radiography, and there is no established method of diagnosis before surgical treatment. Esophagogastroduodenoscopy (EGD) on a 50-year-old Japanese woman revealed a 10 mm submucosal tumor in the anterior wall of the gastric angle. Follow-up EGD revealed an increase in the size of the tumor to 15mm. Endoscopic ultrasonography (EUS) demonstrated a 15mm subepithelial hypoechoic solid tumor with continuity to the proper muscle layer. Histologic diagnosis by endoscopic ultrasonography guided fine needle aspiration (EUS-FNA) was glomus tumor. The tumor was treated by laparoscopic local resection. The histologic diagnosis of the resected tumor was similar to the preoperative EUS-FNA results. EUS-FNA would appear to be an effective histologic test for early diagnosis of gastric glomus tumor.

Key words: Glomus tumor・EUS-FNA・Submucosal tumor

Introduction

Glomus tumor of the stomach is one of the rare submucosal tumors. It is often diagnosed after a surgical operation. Preoperative diagnosis is extremely difficult, because it is hard to obtain histologic evidence of submucosal tumor by conventional endoscopic biopsy.1,2) Diagnosis of gastric submucosal tumor using EUS imaging alone is also very difficult. EUS-FNA is a promising technique to obtain tissue samples with minimal risks.3,4) In this paper, we report a case of successful preoperative diagnosis of small gastric glomus tumor using EUS-FNA.

Case presentation

A submucosal tumor in the anterior wall of the gastric angle was incidentally detected by EGD in a 50 year old Japanese woman at another hospital. One year follow-up EGD revealed an increase in the size up the lesion (10mm to 15mm). She was referred to our hospital for further examination. EGD demonstrated a slightly yellowish 15mm submucosal tumor without delle (Fig. 1). Endoscopic ultrasound with a 12-MHz US catheter probe (SP-702; Fujifilm) disclosed a 12 mm homogeneous, hypoechoic tumor with continuity to the proper muscle layer (Fig. 2). This submucosal tumor was suspected to be a gastrointestinal mesenchymal tumor (GIMT) including gastrointestinal stromal tumor (GIST).

EUS-FNA was performed using a curved-linear echoendoscope (EG-530UT2, Fujifilm, Tokyo, Japan). Puncture was performed with the
use of a 25 gauge needle (Echotip, Wilson–Cook, Winston–Salem, NC, USA). EUS–FNA specimen showed proliferation of oval–shaped cells with eosinophilic cytoplasm arranged in sheets or in nests (Fig. 3).

Immunohistochemical analysis of the cell block showed that the tumor cells were negative for CD56, c–kit, CD34, AE1/AE3, CAM5.2, chromogranin A, desmin, S-100, leukocyte common antigen (LCA), and synaptophysin and were positive for α–smooth muscle actin (SMA) (Fig. 4), vimentin, and MIB-1 (−/+/+<2%). CD34 positive endothelial cells are distributed between the nests. Mitosis was not seen. From these findings the tumor was diagnosed as glomus tumor.

Computed tomography (CT) and transabdominal ultrasonography revealed no metastasis. This tumor was treated by laparoscopic local excision. The tumor size was 12mm in surgical specimen. Postoperative pathological features were the same as those of preoperative EUS–FNA diagnosis. She is in good condition without metastasis 48 months after surgery.

**Discussion**

Glomus tumor of the stomach is a rare disease. This disease was first reported first in 1948 by De Bussacher5. The estimated incidence of glomus tumor of the stomach is about 1% among soft tissue tumors7. It is reported that this tumor arises from neuromyoarterial glomus8. At present it is sometimes pointed out as SMT in EGD by chance in Japan. SMT of the stomach is clinically evaluated by EUS and the original layer
Gastric glomus tumor diagnosed by EUS-FNA

is confirmed. SMT arising from muscularis propria is considered as GIST, leiomyoma, schwannoma, or glomus tumor. These diagnoses are mainly differentiated by immunostaining.

Glomus tumors are mostly benign, and sometimes this tumor may cause gastrointestinal bleeding. Folpe et al. proposed for classification of atypical glomus tumors, malignant glomus tumor and symplastic glomus tumor. Malignant glomus tumors are defined as those that (i) are located deep and greater than 2 cm in diameter, (ii) have marked nuclear atypia and elevated mitotic rates (greater than 5 mitoses/50 high-power fields) or (iii) display atypical mitotic figures. In previous reports, only three out of two hundred cases (1.5%) were reported as malignant glomus tumor. Glomus tumors that have marked nuclear atypia as their sole unusual feature can be labeled symplastic glomus tumors. In our case, H.E. staining revealed none of these characteristic.

At present, it is difficult to diagnose gastric glomus tumors before surgery. Conventional endoscopic bite biopsy is not effective for SMT. Usually SMTs such as GIST or glomus tumor are evaluated by CT or MRI before surgery. Some reports show the determining feature of glomus tumor in CT, and the feature is dense and homogeneous in the arterial phase enhancement and continues to the delay phase. Folpe et al. reported that it is difficult to differentiate some SMTs such as GIST, arteriovenous malformations, carcinoid tumor, heterotopic pancreatic tissue, angioleiomyoma, or angiolipoma from glomus tumor just with CT. Furthermore, some glomus tumors don’t have this feature. As a result, no imaging modalities including CT or MRI are capable of replacing definitive histologic diagnosis.

EUS is also unable to diagnose a glomus tumor accurately because it is impossible to evaluate the pathology using US images alone. The feature of glomus tumor in EUS is usually reported as a hypoechoic lesion between the submucosal and muscularis layer. But this feature also suggests the possibility of GIST or another rare gastrointestinal mesenchymal tumor. Immunohistochemical analysis is vital to obtain a conclusive result. In our case, epithelial tumors including carcinoid tumor, malignant lymphoma, GIST, and glomus tumor were considered in H.E. staining of the EUS-FNA specimen. The diagnosis of carcinoid tumors was excluded because they tested negative for CD56, AE1/AE3, CAM5.2, chromograninA, and synaptophysin. The diagnosis of malignant lymphoma was excluded because it tested negative for c-kit and CD34. From these histologic findings we diagnosed glomus tumor. In most previous EUS-FNA reports, for glomus tumor was diagnosed cytologically. Thanks to refinement of needles and advances in histologic examination techniques, EUS-FNA is now recognized as a reliable test for immunohistochemical analysis of SMT. The reported accuracy of preoperative diagnosis of EUS-FNA using immunohistochemical analysis for surgically resected GIST cases ranges from 91 to 100%. In our case, we could obtain definitive histologic diagnosis, not cytological diagnosis, of glomus tumor using EUS-FNA before surgery, so we could make an early and appropriate decision in this case.

This case suggests EUS-FNA is a very useful diagnostic tool for early diagnosis and early treatment in gastric glomus tumor.

References


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胃グロムス腫瘍の術前早期診断に EUS-FNA が有効であった一例

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胃グロムス腫瘍はまれな疾患であり、上部消化管内視鏡検査（EGD）による生検や画像診断のみでは手術前に診断に至ることは難しい。現在のところ胃グロムス腫瘍を術前に診断することは困難である。

症例は50歳の日本人女性。近医にて施行された EGD にて胃角部前壁に10mm 大の粘膜下腫瘍を指摘された。1 年後のフォローアップの EGD でサイズは15mm 大に増大しており精査加療のため当院を紹介された。当院で施行した超音波内視鏡検査（EUS）で粘膜下に筋層と連続する15mm 大の低エコー充実性腫瘤を指摘。超音波内視鏡下穿刺吸引法（EUS-FNA）を施行しグロムス腫瘍と病理組織学的に診断した。当院外科へ紹介し腹腔鏡下胃局所切除術が施行され、術後の病理組織学は術前の EUS-FNA で採取された組織とほぼ同様でグロムス腫瘍と診断された。EUS-FNA は胃グロムス腫瘍の早期診断に有用な方法であると考えられた。