CASE REPORT

Synchronous Early Gastric Cancer Resembling Submucosal Tumor at the Fundus

Soo Hoon Eun, Joo Young Cho, Wan Jung Kim, Bong Min Ko, Soo Jin Hong, Chang Beom Ryu, Jin-Oh Kim, Joon Seong Lee, So Young Jin, Moon Sung Lee, Chan Sup Shim, and Boo Sung Kim

Institute for Digestive Research, Soonchunhyang University College of Medicine, Seoul, Korea

Concern about detecting gastric carcinoma in its early stages has increased the incidence of detecting multiple synchronous gastric carcinomas. Although gastric carcinomas may present with various gross features, those showing the features of submucosal tumor (SMT) are rare. We report on a case of synchronous gastric carcinomas comprising one lesion with typical features of superficial early gastric carcinoma and the other with atypical features that mimicked SMT. Even though synchronous gastric carcinoma is rare, it may be worthwhile to make a pathological diagnosis of co-existing SMT using endoscopic-ultrasound-guided fine-needle aspiration or endoscopic mucosal resection. (*Gut and Liver* 2007;1:171-174)

Key Words: Synchronous cancer; Early gastric carcinoma; Submucosal tumor

INTRODUCTION

Advances in diagnostic endoscopy have enabled the identification of early gastric carcinomas, which has increased the incidence of detecting multiple synchronous gastric carcinomas. The reported occurrence of a synchronous gastric carcinoma in patients with gastric carcinoma has ranged from 4% to 15%.¹ Although gastric carcinomas can exhibit a variety of macroscopic appearances, those exhibiting the features of a submucosal tumor (SMT) are rare. We present a case of synchronous gastric carcinomas: one exhibiting typical endoscopic features and the other showing atypical endoscopic features mimicking an SMT.

CASE REPORT

A 60-year-old man was referred to our department for further evaluation and treatment of a gastric carcinoma and an SMT that were discovered on esophagogastroduodenoscopy (EGD) during a routine health examination. He had diabetes that was being treated with oral hypoglycemic agents. He complained of mild epigastric pain of several months duration. Physical examination and laboratory tests on admission revealed no abnormalities. EGD revealed a 1.0-cm SMT with a central ulceration on the fundus that had the typical "bridging fold" feature of an SMT (Fig. 1). EGD also demonstrated an erythematous and minimally raised lesion with a central depression at

Fig. 1. Endoscopic view of the tumor showing a covering of normal gastric mucosa and central ulceration.

Correspondence to: Joo Young Cho

Institute for Digestive Research, Soonchunhyang University College of Medicine, 657, Hannam-dong, Yongsan-gu, Seoul 140-743, Korea

Tel: +82-2709-9202, Fax: +82-8709-9696, E-mail: cjoy6695@dreamwiz.com

Received on August 22, 2007. Accepted on October 21, 2007.

the gastric angle (Fig. 2). Endoscopic ultrasound (EUS; GF-UM2000, Olympus, Tokyo, Japan) revealed that the SMT was a homogeneous, well-circumscribed, and hypoechoic mass within the submucosal layer (Fig. 3), and that lymphadenopathy was not present. Furthermore, the lesion at the gastric angle was a hypoechoic thickening of the first sonographic layer of the stomach wall. Computed tomography of the abdomen and pelvis revealed no evidence of lymphadenopathy or distant metastasis. Endoscopic biopsy specimens taken from both lesions revealed them as moderately differentiated adenocarcinomas. Although there were several options for treatment, in-

cluding surgical resection of the stomach, endoscopic resection was chosen based on the wishes of the patient.

Endoscopic submucosal dissection of the lesion at the gastric angle was performed, and the histopathologic examination revealed a moderately to poorly differentiated adenocarcinoma confined to the superficial muscularis mucosa and multiple cystic dilatations lined with gastric epithelium within the submucosal layer, which was suggestive of gastritis cystica profunda (GCP) (Fig. 4). Endoscopic resection of the SMT was also performed, and the histopathologic examination revealed grossly intact gastric mucosa with proliferations of atypical cells in solid nests

Fig. 2. Endoscopic view of the early gastric cancer showing an irregular and slightly raised lesion with central depression.

Fig. 3. Endoscopic ultrasonography imaging showing a 1.0 cm tumor as a hypoechoic homogeneous mass within the submucosal layer.

Fig. 4. (A) Low-magnification view of an endoscopic submucosal dissection specimen from the gastric angle, indicating the presence of moderately to poorly differentiated adenocarcinoma confined to the muscularis mucosa (H&E, $\times 40$). (B) Multiple cystic dilatations lined with gastric epithelium are present under the overlying mucosa (H&E, $\times 160$).

Fig. 5. (A) Whole-mount view of the polypoid mass from the fundus, showing that neoplastic proliferation is confined to the submucosa and that the overlying mucosa is mostly intact except for the periphery near the base (left-lower corner) (H&E, $\times 14$). (B) Microscopic finding of the boxed area in A. The peripheral portion of the mass near the base is a focus of invagination of adenocarcinoma glands into the submucosa (H&E, $\times 40$).

or focal glandular formations, mainly in the submucosa. The base of the mass had a focus of tumor cells, and a few foci of tumor cells invading the lymphatics were also evident (Fig. 5). Because an endoscopic biopsy performed at the endoscopic resection site of the fundus 1 month later revealed remnant cancer cells, the decision was made to perform gastrectomy with lymph node dissection.

DISCUSSION

Gastric carcinoma with features of SMTs is rare, reportedly accounting for 0.62% of all resected gastric carcinomas.² Histologically diagnosing gastric SMTs in a standard endoscopic biopsy is extremely difficult, resulting in 30% of these carcinomas not being diagnosed prior to surgical resection. Gastric carcinomas resembling SMTs frequently have an ulcer or a recess at the top of the tumor. Most adenocarcinomas are undifferentiated or poorly differentiated.

Whilst EUS can provide useful information for differentiating gastric carcinoma resembling SMTs from other gastric SMTs, EUS alone does not necessarily provide a definitive diagnosis.³ If specimens from an endoscopic biopsy do not provide a definitive diagnosis, various techniques such as EUS-guided fine-needle aspiration (FNA) and endoscopic mucosal resection (EMR) can be employed to establish the histopathologic diagnosis.

Several pathologic mechanisms underlying the development of gastric carcinoma with features of SMTs have been described in the literature. These include marked lymphocyte infiltration in medullary adenocarcinoma,²

large amounts of mucin produced by mucinous adenocarcinoma,² and adenocarcinoma arising from an ectopic pancreas in the gastric wall.⁴ However, none of these mechanisms clearly explained our case.

A new mechanism can be postulated based on our histopathologic finding of the GCP coexisting with EGC at the gastric angle. GCP is occasionally associated with atypical hyperplasia or dysplasia and carcinoma development.⁵⁻⁷ We hypothesized that preexisting GCP facilitated the submucosal growth of tumors in the early stage of carcinogenesis in our case.

Multiple early gastric carcinomas have been found in 4% to 15% of patients with early gastric carcinoma.⁸ In cases of multiple synchronous gastric carcinomas, small depressed-type and flat-type accessory lesions are likely to be overlooked preoperatively, being only detected histologically after surgery.

The present case emphasizes the importance of careful evaluations of multiple synchronous carcinomas. Although gastric carcinomas mimicking SMTs are very rare, it may be worthwhile to make a pathological diagnosis using EUS-guided FNA or EMR, rather than EUS alone.

REFERENCES

1. Honmyo U, Misumi A, Murakami A, et al. Clinicopathological analysis of synchronous multiple gastric carcinoma. *Eur J Surg Oncol* 1989;15:316-321.
2. Fukuyama T, Hiraoka T, Hachiya T, et al. Endoscopic studies of gastric cancers showing features of a submucosal tumor. *Jap J Gastroenterol* 1988;8:158-170.
3. Yasuda K, Nakajima M, Yoshida S, et al. The diagnosis of

- submucosal tumors of the stomach by endoscopic ultrasonography. *Gastrointest Endosc* 1989;35:10-15.
4. Hayabe Y, Hajiro K, Tsujimura D, et al. Early gastric cancer resembling submucosal tumor; a case report and review of the literature. *Gastroenterol Endosc* 1989;31:2440-2444.
 5. Franzin G, Musola R, Zamboni G, et al. Gastritis cystica polyposa: a possible precancerous lesion. *Tumori* 1985;71:13-18.
 6. Iwanaga T, Koyama H, Takahashi Y, et al. Diffuse submucosal cysts and carcinoma of the stomach. *Cancer* 1975;36:606-614.
 7. Mitomi H, Iwabuchi K, Amemiya A, et al. Immunohistochemical analysis of a case of gastritis cystica profunda associated with carcinoma development. *Scand J Gastroenterol* 1998;33:1226-1229.
 8. Isozaki H, Okajima K, Hu X, et al. Multiple early gastric carcinomas. Clinicopathologic features and histogenesis. *Cancer* 1996;78:2078-2086.