

CASE REPORT

## 내시경초음파 유도하 미세침 흡인생검으로 진단된 위점막하 종양 유사 부비장

안지용, 정훈용, 김도훈, 최기돈, 송호준, 이진혁, 김진호, 황희상<sup>1</sup>

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### Diagnosis of an Accessory Spleen Mimicking a Gastric Submucosal Tumor Using Endoscopic Ultrasonography-guided Fine-needle Aspiration

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Accessory spleen can be mistaken as a gastric subepithelial mass, and may not be differentiated in CT or endoscopic ultrasonography (EUS). A gastric subepithelial mass was detected on routine endoscopy in a 39-year old woman with history of splenectomy. In subsequent CT and EUS, the subepithelial mass was located on the fourth layer of the stomach. To make a definite diagnosis, EUS-guided fine needle aspiration (FNA) was performed, and a splenic tissue was demonstrated in histologic examination. EUS-guided FNA can be beneficial in the diagnosis of accessory spleen which mimics a gastric subepithelial mass. (*Korean J Gastroenterol* 2012;59:433-436)

**Key Words:** Endoscopy; Spleen; Endosonography; Fine-needle biopsy

#### INTRODUCTION

Accessory spleens can develop as a result of compensatory enlargement of residual splenic tissue following a splenectomy. Accessory spleens can appear as an abdominal mass in post-splenectomy CT.<sup>1</sup> They have been observed in 10-31% of autopsy cases and may manifest as solitary or multiple lesions.<sup>2,3</sup> While accessory spleens have been found at sites from the diaphragm to the scrotum, the vast majority are located in the spleen region, usually in the splenic hilum or along the splenic vessels or associated ligaments. Most accessory spleens appear as small nodules.

The clinical significance of a residual accessory spleen in post-splenectomy patients varies according to the disorder

for which the spleen was removed. The return of splenic function has been implicated in the recurrence of hematologic disorders such as thrombocytopenic purpura.<sup>3,4</sup>

We report a case of an accessory spleen that mimicked a submucosal tumor (SMT) of the stomach at endoscopy in a patient who had previously undergone a splenectomy. EUS-guided fine-needle aspiration (FNA) was performed to confirm the diagnosis of an accessory spleen.

#### CASE REPORT

A 39-year-old woman presented with a gastric SMT which was found during routine endoscopy at another hospital. She was referred to our hospital for further management. Five

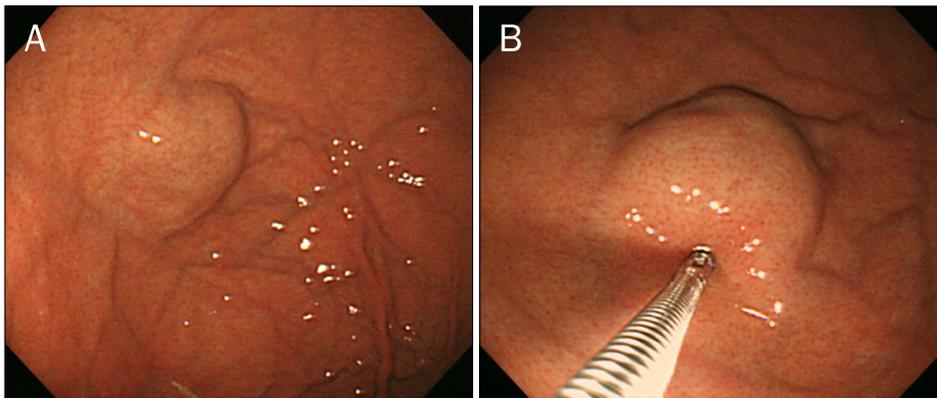
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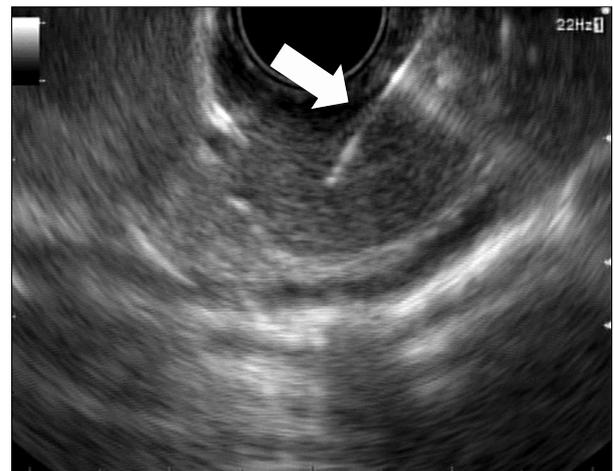
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**Fig. 1.** Upper gastrointestinal endoscopy findings. (A) A gastric SMT-like lesion was approximately 30 mm in diameter. (B) The mass was hard, and had a well-demarcated margin at the gastric fundus.



**Fig. 2.** Abdominal contrast-enhanced computed tomography revealed a well-marginated and enhanced ovoid mass close to the gastric fundus (white arrow).



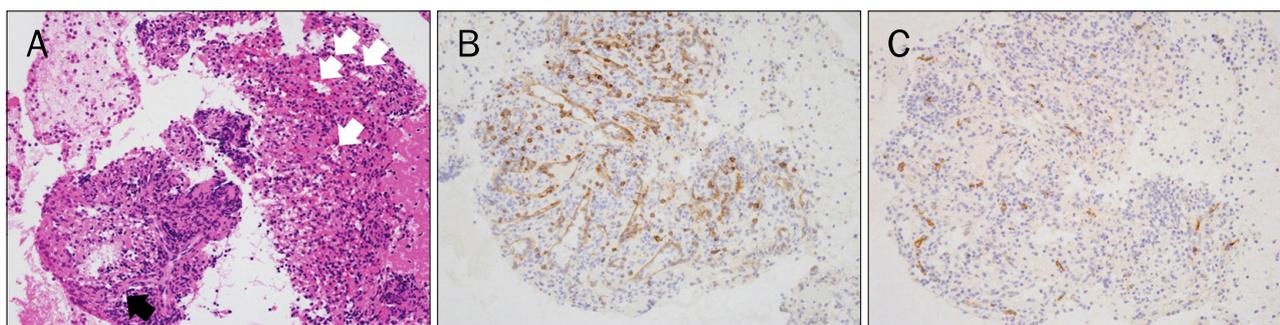
**Fig. 4.** Endoscopic ultrasonography-guided fine needle aspiration findings (white arrow: 25-G needle).



**Fig. 3.** Endoscopic ultrasonography showed a hypoechoic mass in the fourth layer.

months prior she had undergone a simultaneous left hemi-colectomy and splenectomy for colorectal cancer and a wandering spleen, respectively. Her family history was

non-contributory, and she did not smoke or drink alcohol. On admission, the physical examination and laboratory results were all unremarkable. An upper gastrointestinal endoscopy identified a hard, elevated lesion approximately 30 mm in diameter with a well-demarcated margin at the gastric fundus, consistent with a gastric SMT (Fig. 1). An abdominal contrast-enhanced CT revealed a well-marginated and enhanced ovoid mass approximately 19 mm in diameter located close to the gastric fundus (Fig. 2). An EUS was performed for further evaluation, and showed an approximately 27-mm hypoechoic mass in the fourth layer (Fig. 3). With findings of CT and EUS, we could not differentiate a gastric SMT and an accessory spleen. To obtain a definitive diagnosis, we performed EUS-guided FNA (Fig. 4). In the second EUS finding, the lesion was still found on the fourth layer of the stomach and there were no procedure-related complications. Grossly, biopsied specimen was deep red-colored bloody, fri-



**Fig. 5.** Photomicrographs of biopsied submucosal tissue ( $\times 200$ ). (A) Characteristic sinusoidal architectures (white arrows) in splenic red pulp were demonstrated. Transition of capillaries (black arrow) into sheathed capillaries was also present (H&E). (B) The endothelial cells of sinus were positive for anti-CD8 antibody. (C) But, the endothelial cells of sinus were negative for anti-CD34 antibody on immunohistochemical stains. The cells showing positivity for anti-CD34 antibody were endothelial cells of perfollicular sinus.

able soft tissue. On microscopic evaluation, the tissue was mostly composed of monocytes and histiocytes. Many sinusoidal spaces containing red blood cells were intervened between those cells and the terminal end of the capillary branched from the arterioles sheathed by mononuclear phagocytic cells were also identified, which were frequently seen in red pulp or perfollicular zone of human spleen (Fig. 5A). On immunohistochemical stains, endothelial cells in sinusoid architectures were stained with anti-CD8 antibody, which was characteristic immunophenotype of sinus endothelium in splenic red pulp (Fig. 5B). The sinus endothelial cells were not stained with anti-CD34 antibody (Fig. 5C). This pathology results indicated the mass contained splenic tissue, which confirmed it was an accessory spleen. After the procedure, the patient was carefully followed as an outpatient to monitor for any complications such as bleeding due to spontaneous rupture, despite this being a rare possibility. The clinical course was uneventful, and there were no abnormal findings in physical and laboratory examinations during 6 months.

## DISCUSSION

The present report describes the identification of an accessory spleen adjoining the stomach fundus which appeared as a gastric SMT at endoscopy in a patient who had undergone a splenectomy 5 months prior. EUS-guided FNA was used to make a definitive diagnosis of an accessory spleen.

Accessory spleens can undergo compensatory hypertrophy following a splenectomy, and sometimes reach 3-5 cm

in size.<sup>1</sup> Accessory spleens have been reported to mimic gastric SMTs, enlarged lymph nodes, and tumors arising from adjacent organs such as the adrenal gland, pancreas, and kidney.<sup>5-9</sup> Although an accessory spleen is an incidental finding with no clinical significance in most patients,<sup>2,10</sup> they can sometimes become symptomatic due to torsion, spontaneous rupture, hemorrhage and cystic formation.<sup>5-8</sup> Therefore, detection and characterization can be clinically important, especially in cases such as the present one where the lesion mimicked a gastric SMT.

CT and/or radionuclide imaging have been used to identify accessory spleens.<sup>1,9,10</sup> CT is an imaging technique commonly used to evaluate gastrointestinal tract diseases including SMT,<sup>11,12</sup> and is useful in making a differential diagnosis of an accessory spleen.<sup>2,10</sup> Accessory spleens appear round or oval, and the attenuation is identical to that of normal splenic parenchyma both before and after administration of contrast medium in CT,<sup>2,10</sup> as observed in the present patient. EUS is a better modality than CT for differentiating between an SMT and an extrinsic compression lesion of stomach.<sup>13</sup> However, when the findings of both diagnostic methods are not consistent, pathology confirmation is required for a definite diagnosis.

Recently, EUS-guided FNA has been used for tissue sampling of intra- and extraluminal lesions of the gastrointestinal tract to assess SMT and splenic lesions, and it is recognized as a safe, convenient, and effective procedure.<sup>14-17</sup> To date, there are no reports describing the use of EUS-guided FNA for diagnosing an accessory spleen mimicking a gastric SMT which is located on the fourth layer of the stomach in EUS findings.

This report describes the use of EUS-guided FNA for a definite diagnosis of an accessory spleen. Even though we need more follow-up period consisted of careful outpatient monitoring, the post-procedure course was uneventful. So, this diagnostic approach can be thought to be safe and effective when the diagnosis is unclear.

## REFERENCES

1. Beahrs JR, Stephens DH. Enlarged accessory spleens: CT appearance in postsplenectomy patients. *AJR Am J Roentgenol* 1980;135:483-486.
2. Halpert B, Gyorkey F. Lesions observed in accessory spleens of 311 patients. *Am J Clin Pathol* 1959;32:165-168.
3. Curtis GM, Movitz D. The surgical significance of the accessory spleen. *Ann Surg* 1946;123:276-298.
4. Verheyden CN, Beart RW Jr, Clifton MD, Phyliky RL. Accessory splenectomy in management of recurrent idiopathic thrombocytopenic purpura. *Mayo Clin Proc* 1978;53:442-446.
5. Coote JM, Evers PS, Walker A, Wells IP. Intra-abdominal bleeding caused by spontaneous rupture of an accessory spleen: the CT findings. *Clin Radiol* 1999;54:689-691.
6. Valls C, Monés L, Gumà A, López-Calonge E. Torsion of a wandering accessory spleen: CT findings. *Abdom Imaging* 1998;23:194-195.
7. Seo T, Ito T, Watanabe Y, Umeda T. Torsion of an accessory spleen presenting as an acute abdomen with an inflammatory mass. US, CT, and MRI findings. *Pediatr Radiol* 1994;24:532-534.
8. Brewster DC. Splenosis. Report of two cases and review of the literature. *Am J Surg* 1973;126:14-19.
9. Chin S, Isomoto H, Mizuta Y, Wen CY, Shikuwa S, Kohno S. Enlarged accessory spleen presenting stomach submucosal tumor. *World J Gastroenterol* 2007;13:1752-1754.
10. Gayer G, Zissin R, Apter S, Atar E, Portnoy O, Itzhak Y. CT findings in congenital anomalies of the spleen. *Br J Radiol* 2001;74:767-772.
11. Balthazar EJ. CT of the gastrointestinal tract: principles and interpretation. *AJR Am J Roentgenol* 1991;156:23-32.
12. Kim JY, Lee JM, Kim KW, et al. Ectopic pancreas: CT findings with emphasis on differentiation from small gastrointestinal stromal tumor and leiomyoma. *Radiology* 2009;252:92-100.
13. Motoo Y, Okai T, Ohta H, et al. Endoscopic ultrasonography in the diagnosis of extraluminal compressions mimicking gastric submucosal tumors. *Endoscopy* 1994;26:239-242.
14. Yoshida S, Yamashita K, Yokozawa M, et al. Diagnostic findings of ultrasound-guided fine-needle aspiration cytology for gastrointestinal stromal tumors: proposal of a combined cytology with newly defined features and histology diagnosis. *Pathol Int* 2009;59:712-719.
15. Chatzipantelis P, Salla C, Karoumpalis I, et al. Endoscopic ultrasound-guided fine needle aspiration biopsy in the diagnosis of gastrointestinal stromal tumors of the stomach. A study of 17 cases. *J Gastrointest Liver Dis* 2008;17:15-20.
16. Schreiner AM, Mansoor A, Faigel DO, Morgan TK. Intrapancreatic accessory spleen: mimic of pancreatic endocrine tumor diagnosed by endoscopic ultrasound-guided fine-needle aspiration biopsy. *Diagn Cytopathol* 2008;36:262-265.
17. Fritscher-Ravens A, Mylonaki M, Pantès A, Topalidis T, Thonke F, Swain P. Endoscopic ultrasound-guided biopsy for the diagnosis of focal lesions of the spleen. *Am J Gastroenterol* 2003;98:1022-1027.