Yonago Acta Medica 2019;62:166–168 *Patient Report*

Natural History of Exophytic Type Gastrointestinal Stromal Tumor: A Case Report

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ABSTRACT

Gastrointestinal stromal tumor (GIST) is the most common submucosal tumor of the stomach. GISTs are often detected by esophagogastroduodenal endoscopy. We have previously reported on endoscopically invisible medium-sized exophytic type GISTs. We present here a case of small exophytic GIST detected by transabdominal ultrasonography (TUS) in which the natural history of the tumor could be traced retrospectively through incidental findings obtained during follow-up for intraductal papillary mucinous neoplasm by magnetic resonance of imaging or computed tomography over about 10 years. The tumor appeared 7 years before its detection, and the doubling time was calculated as 6.9 years. In conclusion, low-risk exophytic GIST was estimated to have taken at least about 7 years to reach a size detectable by TUS.

Key words exophytic type; gastrointestinal stromal tumor; transabdominal ultrasound

Gastrointestinal stromal tumor (GIST) is the most common submucosal tumor (SMT) of the gastrointestinal tract and approximately 60% are found in the stomach.[1, 2] In Japan, GISTs were detected in 0.3% of patients who underwent screening esophagogastroduodenal endoscopy (EGD) for gastric cancer surveillance.[3] GISTs grow in three patterns: intramural, intraluminal, and exophytic.[4–6] We have previously reported 3 cases of endoscopically invisible medium-sized exophytic GISTs.[7] In this follow-up report, we describe our experience of another case of small exophytic GIST in the greater curvature of the gastric corpus detected by transabdominal ultrasonography (TUS), for which we could trace the natural history retrospectively.

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Abbreviations: CT, computed tomography; EGD, esophagogastroduodenal endoscopy; EUS, endoscopic ultrasound; GIST, gastrointestinal stromal tumor; IPMN, intraductal papillary mucinous neoplasm; MRI, magnetic resonance imaging; SMT, submucosal tumor; TUS, transabdominal ultrasonography

PATIENT REPORT

A 63-year-old woman presented with no symptoms, blood test abnormalities, or tumor markers on routine examination. This patient had a traumatic splenectomy due to a road traffic accident 22 years earlier. She had been followed up for intraductal papillary mucinous neoplasm (IPMN) from about 10 years earlier. A homogenous hypoechoic solid mass of 20 × 16 mm in diameter was detected by TUS at the greater curvature of corpus of the stomach. (Fig. 1A). No tumor was detected by EGD. Computed tomography (CT) revealed a round tumor attached to the greater curvature of the gastric corpus that was weakly enhanced compared with stomach wall (Figs. 1B and C). Endoscopic ultrasound (EUS) revealed a gastric tumor protruding outward from the fourth layer of the stomach wall (Fig. 1D).

We made a histological diagnosis of exophytic gastric GIST from samples obtained by EUS-guided fine needle aspiration (EUS-FNA). The patient underwent laparoscopic partial gastrectomy (Figs. 1E and F) and a definitive diagnosis of GIST was made. Histopathology showed uniform spindle-shaped (Fig. 1G) tumor cells, which were diffusely immunoreactive for CD117 and CD34 (Figs. 1H and I). MIB-1 labeling index was about 3%. Based on these findings, the mass was diagnosed as a low-risk GIST according to clinical practice guidelines in Japan.[8]

The patient had been followed up for IPMN by magnetic resonance imaging (MRI) or CT for about 10 years, therefore, we could trace the images retrospectively. The exophytic GIST had appeared as an 8.0 × 6.3 mm lesion from 7 years earlier (Fig. 2). Doubling time was calculated using the formula {(time in days × log2)/[3 × log (diameter of nodule in current study / diameter in previous study)]}. Doubling time in our case was 6.9 years.

DISCUSSION

We present a case of relatively small exophytic GIST of

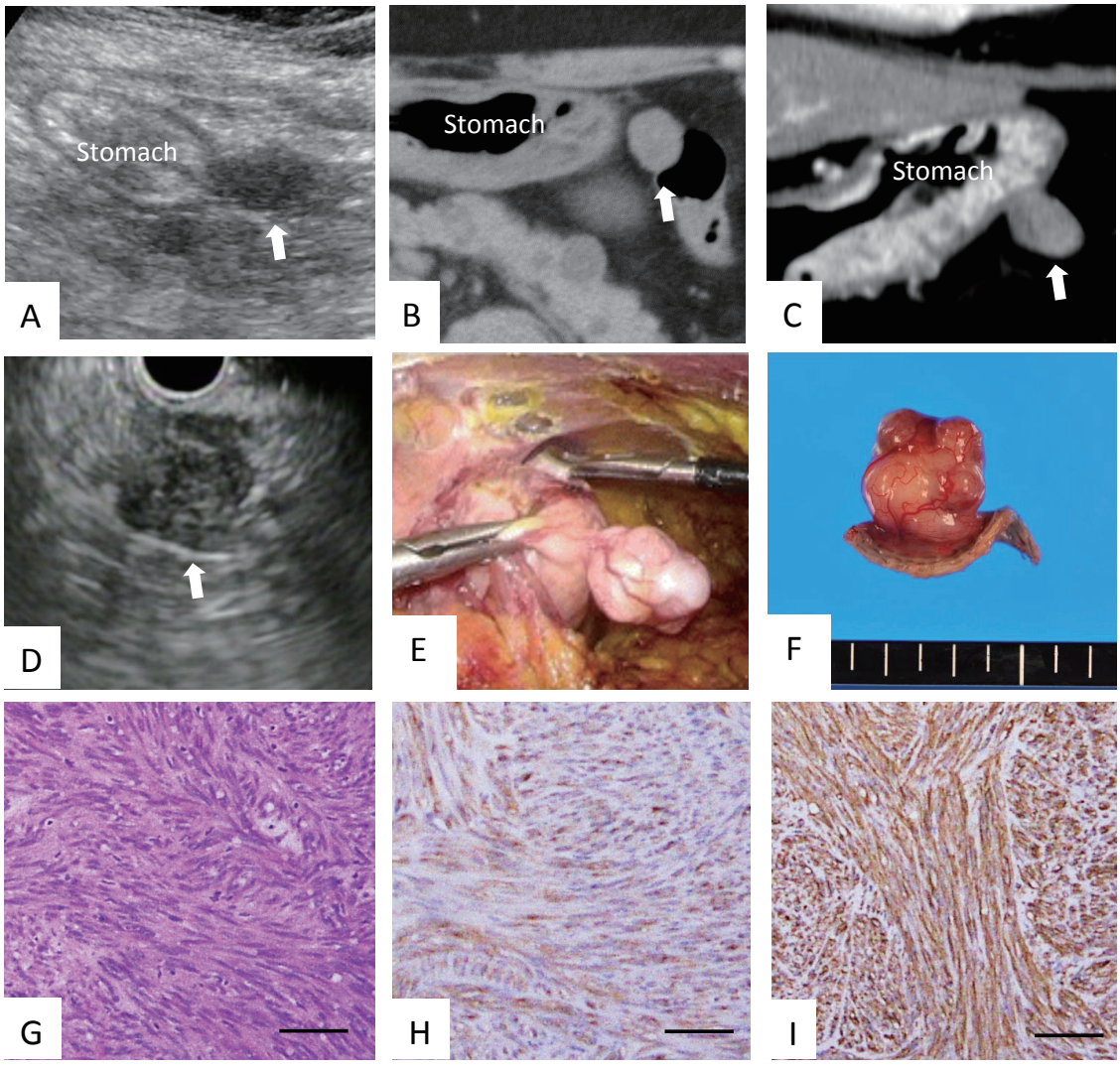

Fig. 1. Findings in this case. (**A**) TUS reveals a hypoechoic solid mass (arrow) of 20 × 16 mm in diameter located on the greater curvature of the gastric corpus. (**B**) CT reveals a round tumor being iso dense to the stomach (**C**) The tumor is weakly enhanced compared with the stomach wall (arrow). (**D**) EUS depicts hypoechoic round tumor adjacent to the stomach wall. (**E**) The tumor was resected laparoscopically. (**F**) The resected tumor measuring 20 mm in diameter and a white round mass protruding outward. (**G**) Histologically, the tumor is composed of uniform spindle-shaped cells. Tumor cells diffusely immunoreactive for (**H**) CD117 and (**I**) CD34. Scale bar = 50 μm. CD, cluster of differentiation; CT, computed tomography; EUS, endoscopic ultrasound; TUS, Transabdominal ultrasound.

the stomach detected by TUS for which the natural history could be traced retrospectively. To our knowledge, this is the first report that presents the natural history of exophytic GIST.

The differential diagnoses of hypoechoic masses located around the stomach are hepatocellular carcinoma, metastatic lymph nodes, IPMN, splenosis, and gastric SMTs including GISTs, leiomyomas, granular cell tumor, pancreatic rest, lymphoma, or metastasis.[9–11] In this case particularly, splenosis was considered because of the history of splenic injury. To distinguish these lesions, the anatomic relationships between adjacent organs are very important. In our case, the lesion was finally confirmed to have originated from the stomach wall by EUS. Most patients with small GISTs have no symptoms and are diagnosed incidentally by endoscopy, radiologic imaging, or abdominal exploration. TUS detected 69% of gastric SMTs which are typically diagnosed endoscopically.[12] Similarly, sensitivity and specificity for the detection of endoscopically diagnosed gastric SMTs were reported as 82.5% and 100%, respectively.[13] That report also indicated that the detection rates of gastric SMTs over 20 mm in size by TUS were 97% to 100%. As discussed in our previous report, it is difficult to detect exophytic growth pattern of GISTs by EGD. Therefore, the precise incidence and the natural history of exophytic GIST is

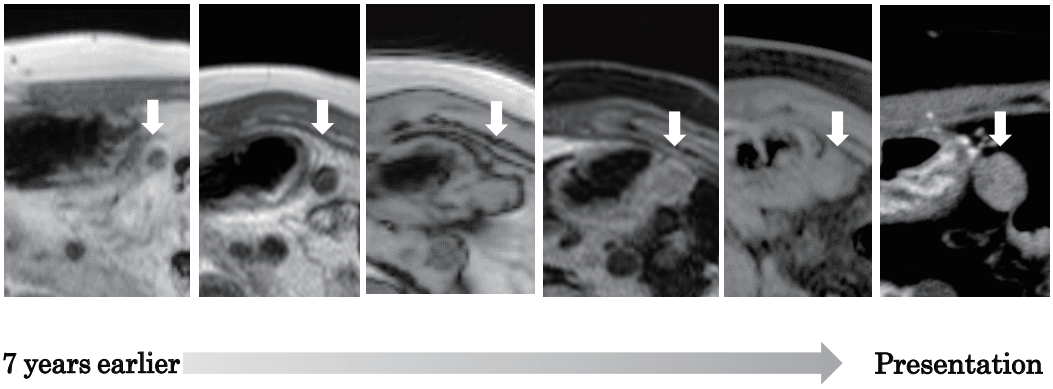

Fig. 2. Serial images of low-risk exophytic GIST (arrow) over 7 years. From the left side, T1WI MRI at 7, 4, and 3 years earlier; enhanced MRI at 2 years earlier; T2WI MRI at 1 year earlier and enhanced CT at presentation. CT, computed tomography; GIST, gastrointestinal stromal tumor; MRI, magnetic resonance imaging.

still unknown.

Koizumi et al. reported that the doubling time of GIST was 24.0 months for extremely low-risk and low-risk GISTs, 17.1 months for intermediate-risk GISTs, and 3.9 months for high-risk GISTs.[14] Doubling time in our case was calculated as 6.9 years based on the size increase from 8.0 × 6.3 mm to 20 × 16 mm; this is very slow and implies low risk. All our previously reported 3 cases were also low-risk GISTs and might have taken at least 7 years to reach the size detectable by TUS. This might also mean that exophytic GISTs would be difficult to detect by TUS if less than 2 cm. However, GISTs of diameter less 2 cm are classified as very low risk in the Japanese Clinical Practice guidelines.[8] We consider TUS to be applicable for detecting exophytic GISTs.

We encountered a case of endoscopically invisible exophytic GISTs of the stomach detected by TUS. Low-risk exophytic GIST was estimated to have taken at least 7 years to reach the size detectable (around 2 cm) by TUS.

The authors declare no conflict of interest.

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