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Advanced Gastric Cancer With Intramural Abscess: A Case Report of a Rare Clinicopathological Condition

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Abstract. *Background: Gastric wall abscess (GWA) itself is a rare clinicopathological condition, and there has been no report of primary gastric cancer complicated by GWA. Herein, we present a case of advanced gastric cancer with intramural abscess, which was successfully treated with curative gastrectomy. Case Report: A 77-year-old woman was admitted to the hospital for dull epigastric pain with inflammatory findings and diagnosed with advanced gastric cancer (cT4aN1M0 Stage III) with intramural abscess. Since an endoscopic ultrasonography-guided abscess drainage was not effective, after conservative therapy with antibiotics, she underwent distal gastrectomy with D2 lymphadenectomy and fortunately the tumor with abscess was safely and curatively removed without perforation. Microscopically, the 82×65 mm tumor invaded the subserosa and contained tubular adenocarcinoma with neuroendocrine cell carcinoma (pT3N0M0 Stage IIB), and the abscess formed from the ulcerative lesion of the cancer extended to the subserosa. The postoperative clinical course was uneventful, and she remained disease-free during the 22 months follow-up. Conclusion: Given the nature of the disease and the difficulty in endoscopic treatment, gastrectomy should be performed immediately for advanced gastric cancer with GWA to ensure control of both gastric cancer and infection.*

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Gastric wall abscess (GWA) is a rare condition known as a type of phlegmonous and suppurative gastritis (1). Most GWAs occur as adverse events followed by mucosa injury such as endoscopic biopsy, tumor, or gastric ulcer. Regarding tumors, some GWAs have been reported to occur by a gastric stromal tumor or by direct invasion of cancer in other organs into the gastric wall (1, 2); however, to the author's knowledge, GWA caused by primary gastric cancer has not yet been reported. Herein, we present a case of advanced gastric cancer with intramural abscess, which was successfully treated with curative gastrectomy.

Case Report

A 77-year-old woman was admitted to a previous hospital for dull epigastric pain in the upper left abdominal quadrant for 4 days. Her medical history was unremarkable other than age-related macular degeneration. Laboratory workup showed white blood cells (WBC) 13.8×10^9/l, C-reactive protein (CRP) 16.7 mg/dl, carcinoembryonic antigen (CEA) 1.4 ng/ml and CA19-9 2.0 U/ml. Abdominal contrast-enhanced computer tomography (CT) showed wall thickening with surrounding fat stranding of the greater curvature of gastric body, and a rim-enhancing irregular cystic mass, 70 mm in diameter, extended from the thickened gastric wall (Figure 1A). Esophagogastroduodenoscopy (EGD) revealed an advanced gastric cancer, compatible with Borrmann type 2, in the greater curvature wall of the middle body of the stomach (Figure 2A). Biopsy specimen obtained from this lesion demonstrated tubular adenocarcinoma cells. Endoscopic ultrasonography (EUS) showed a hypoechoic mass penetrating the muscularis propria and an irregular hypoechoic lesion following from the mass (Figure 2B). EUS-guided abscess drainage using a needle knife was performed; however, it was very difficult to keep the endoscope view clear because of bleeding, thus only a small amount of purulent discharge could be drained, which was insufficient even for bacterial culture. Thereafter, the patient was transferred to our

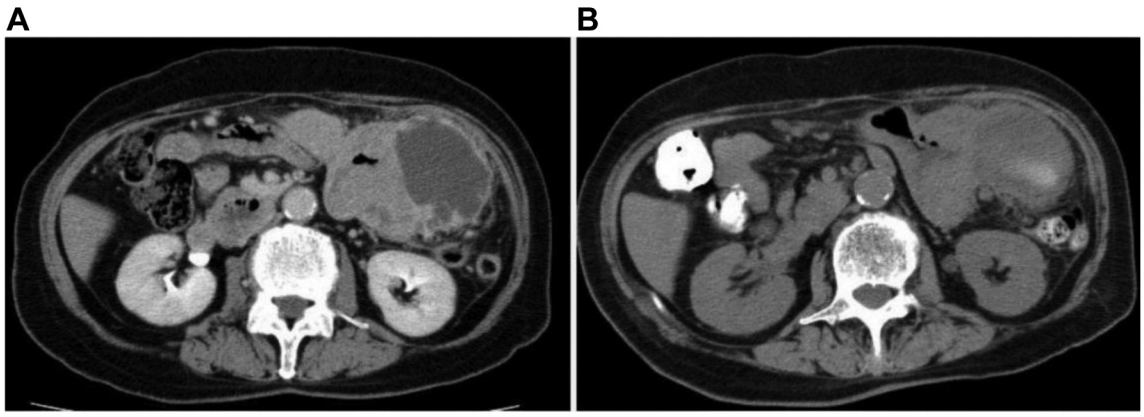

Figure 1. *Computed tomography (CT) findings. A) Abdominal contrast-enhanced CT showed a gastric wall thickening and rim-enhancing cystic mass, 70 mm in diameter, suggestive of an advanced cancer with intramural abscess in the greater curvature of the stomach. B) Abdominal plain CT after antibiotics treatments showed the persistent cystic mass.*

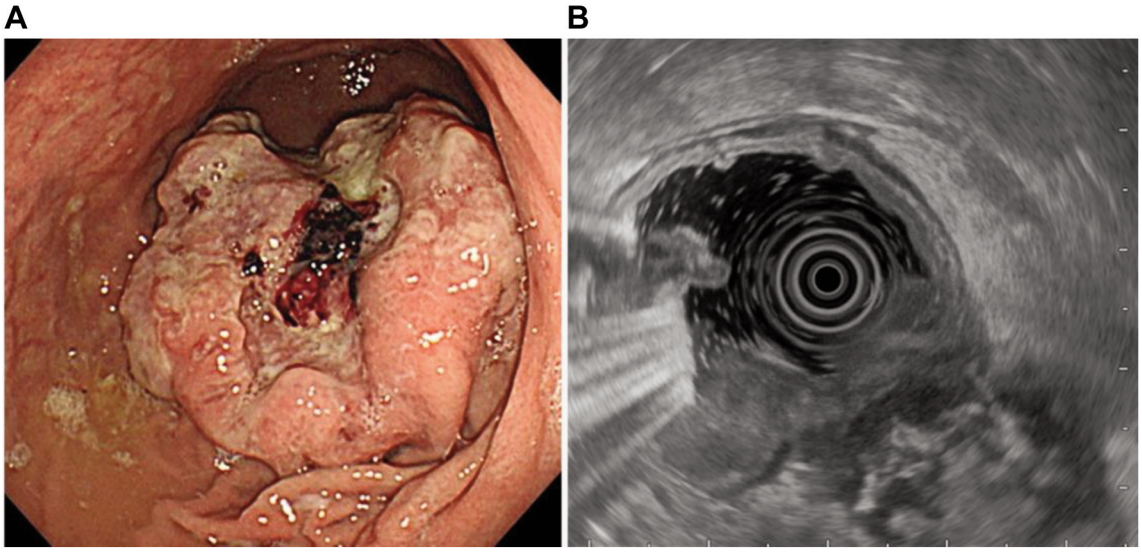

Figure 2. *Esophagogastroduodenoscopy (EGD) and Endoscopic ultrasonography (EUS) findings. A) EGD showed an advanced gastric cancer in the greater curvature wall of the stomach. B) EUS showed a hypoechoic mass penetrating the muscularis propria and an irregular hypoechoic lesion following from the mass, suggestive of an abscess complicated by advanced gastric cancer.*

institution. At the time of admission, improvements in inflammation markers (WBC: 7.6×10^9/l; CRP: 8.6 mg/dl) were found due to intravenous meropenem for one week at the previous hospital even though endoscopic drainage had been unsuccessful. Meanwhile, the persistent cystic mass in the greater curvature of the gastric body (Figure 1B) was observed in the abdominal CT even after endoscopic drainage followed by antibiotics. Based on the above findings, she was diagnosed with a Union for International Cancer Control (UICC) stage III gastric cancer (cT4aN1M0) (3) with intramural abscess, and underwent distal gastrectomy with D2 lymph node dissection and Roux-en Y gastrojejunostomy according to Japanese gastric cancer treatment guidelines (4). At the operation, the mass was adhered to the abdominal wall; however, the adhesion was easily peeled off and the mass was curatively removed. The resected specimen revealed an ulcerative tumor with cystic mass swelling into the gastric wall (Figure 3). Microscopically, the 82×65 mm tumor invaded the subserosa and contained tubular adenocarcinoma with neuroendocrine cell carcinoma (Figure 4A and B). There was no lymph node metastasis and the pathological stage was UICC stage IIB (pT3, pN0) (3). Regarding the neuroendocrine

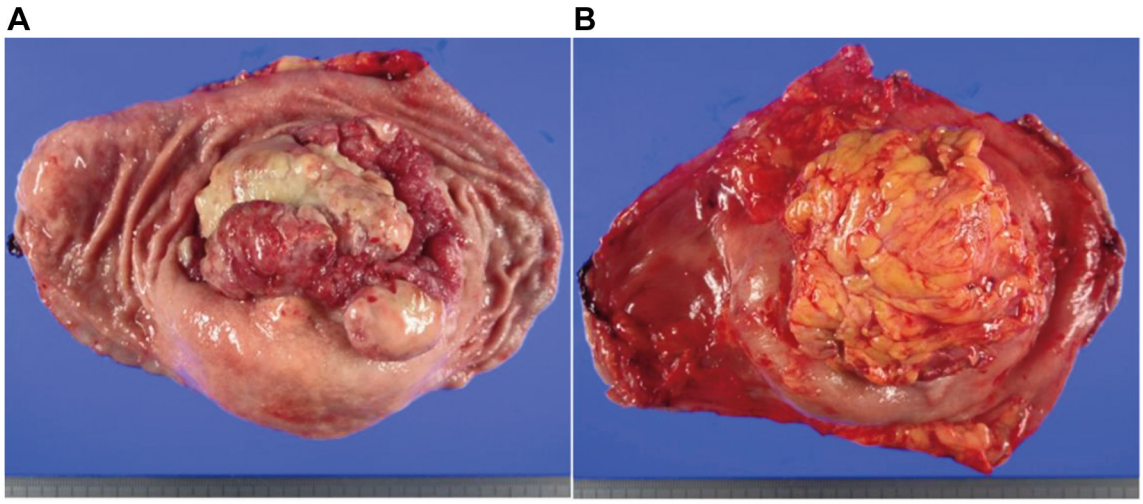

Figure 3. *Gross findings of the resected sample. A 82×65-mm ulcerated tumor and large abscess, 100 mm in diameter, next to the tumor were observed in the middle stomach.*

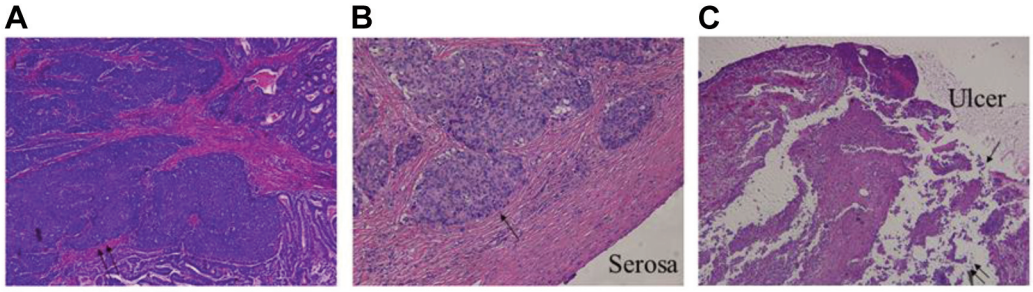

Figure 4. *Pathological findings of the resected sample. A, B) Hematoxylin and eosin (H&E) staining of the tumor. Tubular adenocarcinoma cells infiltrating the subserosa layer (single arrow). Neuroendocrine carcinoma cells were also confirmed inside the tumor (double arrow). C) H&E staining of the gastric wall. Abscess from the ulcerative site (single arrow) extended toward the serosa (double arrow).*

cell carcinoma, the immunohistochemical staining was positive for synaptophysin, whereas negative for CD56, chromogranin A, and SALL4. The abscess formed from the ulcerative lesion of the cancer extended to the subserosa (Figure 4C); however, it did not break up the serosa. The postoperative clinical course was uneventful, and the patient remained disease-free during the 22 months follow-up.

Discussion

GWA is one type of phlegmonous and suppurative gastritis, and most likely due to infection, through hematogenous infection or direct invasion by microorganisms such as mucosa injury or trauma (5). With regard to mucosa injury or trauma, most cases were reported to be caused by the endoscopic biopsy procedure, though penetrating trauma such as from toothpick or fish bone was also reported (6, 7). Besides, direct invasion of tumors in other organs such as the colon or metastasized tissues has been also reported to be a cause of GWA (1). In the present case, there was no infectious focus and tumorous lesion other than that in the stomach; therefore, it was difficult to suppose that the GWA had occurred by hematogenous infection or direct invasion of microorganisms or tumor from outside the gastric wall. Considering the clinical course and endoscopic findings, it was also unlikely that the mucosal damage by endoscopic treatments or a foreign body had resulted in GWA. Identification of the causative pathogen may have helped to elucidate the mechanism of GWA formation in this case (7-10); however, unfortunately, the bacterial culture could not be obtained during endoscopic drainage.

As other causes of GWA, it was also reported that GWA may occur as a complication of ulcer, gastritis, gastric tumor, or gastric surgery (11). Actually, some cases have been reported

to be derived from a gastric submucosal tumor or ectopic pancreas (2, 9, 12); however, there has been no report of GWA complicated by primary gastric cancer. Regarding pathogenesis, intramural hemorrhage, necrosis, and thrombosis have been reported to be the causes of acute phlegmonous gastritis (13, 14). Therefore, in the present case, GWA might have been caused by the advanced gastric cancer itself. It was too difficult to accurately evaluate the reason why advanced gastric cancer had been complicated by GWA only in this case from the findings of the formalin-fixed specimen. However, since the advanced tumor contained neuroendocrine cell carcinoma components, tumor hemorrhage or necrosis tended to occur, which might have resulted in abscess formation.

EUS has recently been reported to be a useful diagnostic modality for GWA (1, 6) which is detected as a hypoechoic mass within the gastric wall (15). Moreover, the usefulness of an interventional EUS procedure for the treatment of GWA has been reported (1, 10, 15). In this case, a hypoechoic mass arising from the ulcerative site and spreading to the deeper layer was able to be confirmed using EUS; however, an EUS-guided abscess drainage was not effective because it was difficult to perform drainage through the advanced gastric cancer. Percutaneous drainage has also been reported to be useful (16); however, it was unavailable in this case considering the risk of cancer dissemination. Therefore, gastrectomy immediately after antibiotics treatment was considered to be the most appropriate treatment for this patient to reduce the fasting period, the risk of abscess perforation, and cancer dissemination as much as possible.

In conclusion, primary advanced gastric cancer complicated by GWA is very rare. Given the nature of the disease and the difficulty in endoscopic treatment, gastrectomy should be performed immediately for advanced gastric cancer with GWA to ensure control of both gastric cancer and infection.

Conflicts of Interest

The Authors have no conflicts of interest to declare in relation to this study.

Authors' Contributions

S. O. and T. K. carried out the study. K. S., T. K, and K. O. treated the patient. S. O. wrote the manuscript with support from T.K. and K.O. and E. O. supervised the study.

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