Recurrence of gastric cancer invading the main pancreatic duct: A case report

**Hiroshi Maekawa, Hajime Orita, Mutsumi Sakurada, Tomoyuki Kushida,
Tomoaki Ito, Koichi Sato**

ABSTRACT

Introduction: Locoregional recurrence of gastric cancer is sometimes seen in clinical practice, but the finding of intraductal spread to the main pancreatic duct is unique. Here, we report a case of recurrent gastric cancer involving the main pancreatic duct caused by lymphatic spread into the pancreas.

Case Report: A 76-years-old female was admitted to our hospital because of abnormality of the pancreas without symptoms. She had been treated with distal gastrectomy due to locally advanced gastric cancer 24 months before admission. Computed tomography scan showed a swelling in the pancreatic body containing a low-density area. MRI scan revealed that the low-density area of the central pancreas was the main pancreatic duct dilated and filled with a tumor. Resection of the gastric remnant with distal pancreatectomy and splenectomy were performed under a diagnosis of a primary pancreatic tumor or gastric cancer recurrence. Pathological examination revealed that a tubular adenocarcinoma packed the main pancreatic duct, and the same neoplasm infiltrating the pancreatic parenchyma was also found. Finally, we diagnosed the lesion as the lymphatic recurrence of gastric cancer. The patient had survived for 12 months since metastasectomy without signs of recurrence.

Conclusion: Recurrence of gastric cancer sometimes invades to pancreatic parenchyma and mimics the intraductal pancreatic neoplasm. If the complete resection of locoregional recurrence of gastric cancer is performed, surgical treatment will contribute to prolonging the survival.

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CASE REPORT

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Keywords: Gastric cancer, Locoregional recurrence, Pancreas, Metastasis

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Hiroshi Maekawa¹, Hajime Orita², Mutsumi Sakurada², Tomoyuki Kushida², Tomoaki Ito², Koichi Sato³

Affiliations: ¹Assistant Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan; ²Associate Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan; ³Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan.

Corresponding Author: Hiroshi Maekawa, 1129 Nagaoka, Izu-no-kuniCity, Shizuoka410-2295, Japan; Ph: +81-55.948.3111, Fax: +81-55.948.0541; Email: hmaekawa0201@gmail.com

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INTRODUCTION

Clinically, recurrences of radical gastrectomy are usually noticed as peritoneal dissemination and locoregional recurrence [1]. Pancreatic invasion with locoregional recurrence is sometimes seen in clinical practice, but the finding of intraductal spread to the main pancreatic duct is unique. Here, we report a case of recurrent gastric cancer involving the main pancreatic duct caused by lymphatic spread into the pancreas. Complete resection for locoregional recurrence will contribute to prolonging survival.

CASE REPORT

A 76-years-old woman was admitted to our hospital because of pancreatic abnormality during post-radical gastrectomy follow-up. She had received distal gastrectomy with Billroth II reconstruction for locally advanced gastric cancer of the gastric antrum 24 months before admission. Pathological findings of gastric cancer were tubular adenocarcinoma T3, N1 (only one positive node on proximal splenic artery), Po, Ho, Mo stage IIIA according to UICC classification. After distal gastrectomy, she started the administration of S-1 at 80 mg/day every other day for adjuvant therapy. Twelve months after gastrectomy, the serum level of CA19-9 was 12 IU/ml. Follow-up CT scan was performed but it failed to reveal recurrence, showing only postoperative change on the pancreatic surface. Subsequently, the serum level of CA125 has been elevating up to 70 IU/ml. There have been no symptoms such as abdominal pain, appetite loss or abdominal distention. On admission, there was no abnormal mass palpable in the abdomen. Regarding laboratory findings, the serum level of CEA was 8 ng/ml, CA19-9 was 40 IU/ml, and CA125 was 90 IU/ml. The serum level of amylase was 51 IU/ml. Computed tomography scan demonstrated a three-cm low-density area in the pancreatic body, and the main pancreatic duct of the pancreatic tail was dilated (Figure 1). Neither swollen para-aortic lymph nodes nor abnormal ascites were noted. MRI scan revealed the existence of the tumor in the pancreatic body, and the tumor seemed to infiltrate the main pancreatic duct (Figure 2). ERCP was performed but failed to cannulate the main pancreatic duct. Positron emission tomography (PET) using ^{18}F -fluorodeoxyglucose demonstrated a hot spot superimposing on the pancreatic tumor. Although we could not confirm that the lesion was a primary pancreatic tumor or recurrence of gastric cancer, it was considered to be a potentially malignant lesion based on PET findings. We performed resection of the gastric remnant and distal pancreatectomy and splenectomy. Regarding the operative findings, the pancreatic tumor adhered to the remnant stomach and the splenic artery was involved. There was no peritoneal dissemination or swollen para-aortic nodes. The pancreas was cut on the left side of the portal vein. The remnant stomach and distal pancreas and spleen were resected en bloc. Concerning the pathological findings of the resected specimen, the pancreatic body was thickened and the main pancreatic duct was dilated with the tumor (Figure 3). The splenic artery was involved with the tumor. Histopathologically, the intraductal tumor was composed of tubular adenocarcinoma (Figure 4), and the parenchyma of the pancreatic body also contained tubular adenocarcinoma (Figure 5). The cancer showed infiltrative growth and invaded the remnant gastric wall. We compared the immunohistochemical characters of the resected tumor with those of the gastric cancer previously resected. Both tumors were positive for MUC6 and CK7, and negative for MUC2. With these findings, we finally

diagnosed the patient with the recurrence of gastric cancer that had infiltrated the pancreas and spread into the main pancreatic duct. The surgical margins were all negative for cancer. The patient suffered from ileus after resection because of intra-abdominal infection due to postoperative pancreatic fistula (ISGPF grade B), and was discharged 30th postoperative day. She has shown no signs of recurrence for 12 months.

Figure 1: Computed tomography scan two years after distal gastrectomy. Abdominal CT scan demonstrating a low-density area in the pancreatic body, and the main pancreatic duct of the pancreatic tail is dilated.

Figure 2: Magnetic resonance imaging scan two years after distal gastrectomy. T2-weighted MRI scan showed the existence of the tumor in the pancreatic body, and the tumor seemed to infiltrate into the main pancreatic duct.

Figure 3: Pathological findings of the resected specimen on gross inspection (H&E stain, x40). The tumor cells infiltrated and packed the main pancreatic duct.

Figure 4: Histological findings of the tumor infiltrating the main pancreatic duct (H&E stain, x100). Histopathologically, the intraductal tumor was composed of tubular adenocarcinoma.

Figure 5: Histological findings of the tumor infiltrating the main pancreatic duct (H&E stain, x100). The parenchyma of the pancreatic body also contained tubular adenocarcinoma.

DISCUSSION

Recurrences often occurred in clinical practice after the curative resection of gastric cancer. Recurrence patterns following radical gastrectomy are classified as locoregional, peritoneal, and hematogenous. Wu et al. [2] reported that half of recurrence cases showed an initial single recurrence and 45% were locoregional recurrence. The incidence of recurrence patterns differs regionally throughout the world. Peritoneal recurrence is the most common pattern of recurrence in Asian countries [1], but locoregional recurrence is the most common in Western countries [3]. Locoregional recurrence is defined as recurrence at the resected margin, lymph nodes including para-aortic nodes, or in the surgical bed within the resection. The most common treatment for the recurrence of gastric cancer including locoregional recurrence is chemotherapy because recurrent gastric cancer is considered unresectable and early recurrence may occur after metastasectomy. However, in some cases of locoregional recurrence, if complete resection of the recurrent lesion is performed, the patients' survival may be prolonged [4]. Metastatic pancreatic tumors are relatively rare, with an incidence of 2–4.5% in all pancreatic tumors

[5]. Most of them are hematogenous metastases of renal cell carcinoma [6]. Other than a hematogenous origin, local recurrence of malignancy from an organ adjacent to the pancreas is another origin of secondary malignancy of the pancreas. Advanced gastric cancer sometimes invades the pancreas, because the pancreas is adjacent to the stomach. In our case, the cancer cells remained in the surgical bed of the pancreatic surface or adventitia of the splenic artery where the positive lymph node existed. Also, the residual cancer cells infiltrated the pancreas and invaded the main pancreatic duct. The intraductal invaded cancer cells grew and finally packed the pancreatic duct. Maehara et al. [7] classified pancreatic invasion of gastric cancer into three types: invasion only to the pancreatic capsule, invasion to the capsule and interlobular tissues, and invasion to the capsule and intralobular tissues. It has been reported that the degree of serosal invasion and lymphovascular invasion may be associated with locoregional recurrence [8]. Our case showed the invasion to the intralobular tissues. It mimicked an intraductal tubulo-papillary neoplasm of the pancreas. We could not find the incidence of such intraductal spread appearance of pancreatic metastatic tumor in previous reports. The appearance of our case is considered to be a unique. Computed tomography (CT) scan is considered a useful examination for the detection of recurrence. However, CT-based diagnosis of recurrence can be difficult due to treatment-induced morphologic changes. In our case, CT scan demonstrated the thickness of the pancreatic surface, but we missed the fibrous scar on the surface of the pancreas showing recurrence. PET is another examination for detecting gastric cancer recurrence. The positivity and specificity of PET for gastric cancer recurrence are reportedly 75–85 and 77–90%, respectively [9]. In our case, the findings of PET/CT were helpful to decide on surgical resection. The prognoses of the patients with recurrent gastric cancer are poor even though chemotherapy regimens have been developed, but some recurrent gastric cancer patients with locoregional recurrence may show a prolonged survival time with surgical treatment. However, the surgical indication for locoregional recurrence should be limited to R0 resection. An approximately 20% five-year survival rate was expected with complete resection [10]. Intensive follow-up for advanced gastric cancer is necessary. We should not miss the opportunity to perform R0 resection for locoregional recurrence.

CONCLUSION

Recurrence of gastric cancer, if it invades to pancreatic parenchyma, sometimes mimics an intraductal tubulo-papillary neoplasm of the pancreas. If the complete resection of locoregional recurrence of gastric cancer is performed, surgical treatment will contribute to prolonging the survival.

Author Contributions

Hiroshi Maekawa – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Hajime Orita – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Mutsumi Sakurada – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Tomoyuki Kushida – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Tomoaki Ito – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Koichi Sato – Conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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ABOUT THE AUTHORS

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Hiroshi Maekawa is Assistant Professor at Department of Surgery of Shizuoka hospital Juntendo university School of Medicine. His research interests include pancreatic surgery.
E-mail: hmaekawa0201@gmail.com

Hajime Orita is Associate Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan.

Mutsumi Sakurada is Associate Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan.

Tomoyuki Kushida is Associate Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan.

Tomoaki Ito is Associate Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan.

Koichi Sato is Professor, Department of Surgery, Juntendo University School of Medicine, Shizuoka Hospital, Izu-no-kuni City, Shizuoka, Japan.

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