

Pathological complete response from oral chemotherapy combined with trans-arterial chemotherapy and embolization in an unresectable gastric cancer patient

A case report

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Abstract

Rationale: Gastric cancer is still one of the most common cancer in East Asia. More than 70% gastric cancer patients are diagnosed at an advanced stage in China. Moreover, about 10% cases are unresectable which usually suffer a poor prognosis with a median survival time of 5 to 12 months. In recent years, some clinical studies found that many unresectable gastric cancer cases could get opportunity for surgery after treatment that improve prognosis significantly

Patient concerns: 64-year-old male patient was admitted with upper abdominal pain. Upper gastrointestinal endoscopy showed a large ulcerated tumor located from the cardia to the anterior wall of the upper gastric body. Histopathological examination showed it was moderately differentiated adenocarcinoma. Computed tomography (CT) scan image showed a large bulging mass with internal ulcer at the lesser curvature wall, left gastric artery and coeliac trunk were surrounded by fused lymph nodes.

Diagnoses: Based on the histopathological examination and imaging findings, patient was diagnosed advanced gastric cancer and hardly to resect radically.

Intervention: Oral chemotherapy combined with trans-arterial chemotherapy and embolization (TACE) was initiated. Eight weeks after initial therapy, radical laparoscopy-assisted total gastrectomy with D2 lymph node dissection and Roux-en-Y anastomosis were performed successfully.

Outcomes: Patient was discharged on postoperative day 11 without complications. Histological analysis of the specimen and resected 31 lymph nodes revealed no malignancy. The patient experienced a pathological complete response (pCR).

Lessons: In this case, oral chemotherapy combined with TACE which was rarely reported in the treatment of unresectable gastric cancer achieves a great therapeutic benefit. Although further clinical studies will be needed to establish, it may be a potent strategy for degrading stage and supplying a new chance for surgery.

Abbreviations: CT = computed tomography, DSA = digital subtraction angiography, pCR = pathological complete response, TACE = trans-arterial chemotherapy and embolization, UICC = Union internationale contre le cancer.

Keywords: chemotherapy, gastric cancer, pathological complete response, trans-arterial chemotherapy and embolization

1. Introduction

Although gastric cancer shows decreasing trends in its incidence in recent years, it is still one of the most common cancer in East Asia. More than 70% gastric cancer patients are diagnosed at an advanced stage in China.^[1] Moreover, about 10% cases are

unresectable which diagnosed at a far advanced stage and hard to resect radically. These cases usually suffer a poor prognosis with a median survival time of 5 to 12 months.^[2,3] Fortunately, in recent years some clinical studies found that many unresectable gastric cancer cases could get opportunity for surgery after treatment with chemotherapy, radiotherapy, trans-arterial

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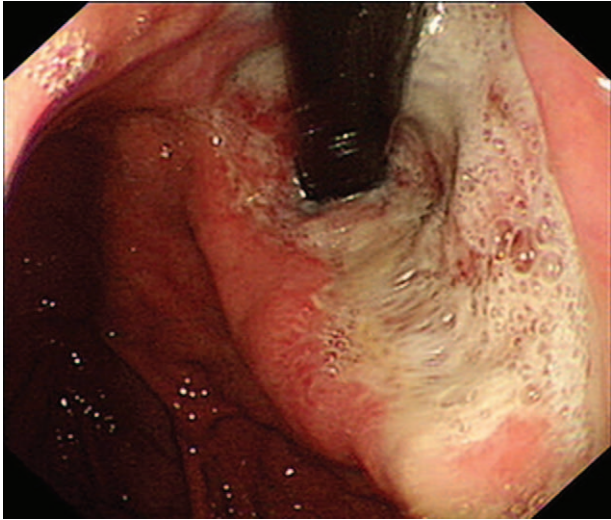


Figure 1. Upper gastrointestinal endoscopy showed a large ulcerated tumor located from the cardia to the anterior wall of the upper gastric body.

chemotherapy and embolization (TACE), targeted therapy and so on which improve prognosis significantly.^[4,5] Here, we report a case of an unresectable gastric cancer patient who experienced a pathological complete response (pCR) to oral chemotherapy combined with TACE treatment.

2. Case presentation

A 64-year-old male patient was admitted to the Department of Gastrointestinal Surgery, complaining of upper abdominal pain and postprandial bloating. The patient has no medical history. He is a nonsmoker, does not consume alcohol and with no family history. Physical examination showed no positive sign. Laboratory data showed a decreased hemoglobin level of 12.2 g/dL and an elevated tumor marker level of carbohydrate antigen 125 (CA 125) of 44 mg/dL. Upper gastrointestinal endoscopy showed a large ulcerated tumor, about 7 cm in size located from the cardia to the anterior wall of the upper gastric body (Fig. 1). Histopathological examination with biopsy specimen from the tumor showed it was moderately differentiated adenocarcinoma.

Contrast enhanced computed tomography (CT) was performed with orally ingesting 800 mL water. CT scan image showed a large bulging mass with internal ulcer at the lesser

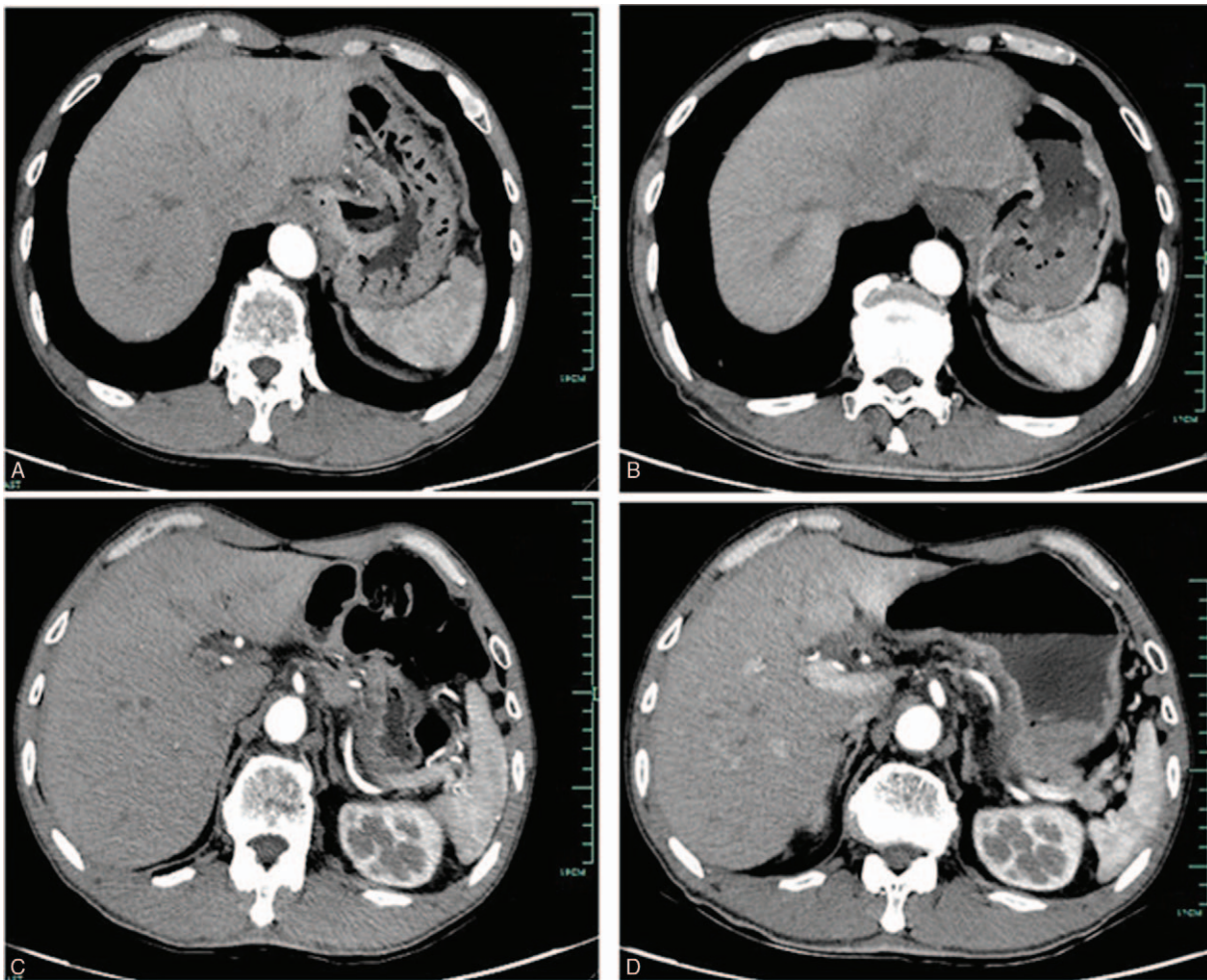


Figure 2. CT showed a large bulging mass with internal ulcer at the lesser curvature wall of the gastric upper body near the cardia (A), left gastric artery and coeliac trunk were surrounded by fused lymph nodes (C). After conversion treatment, the primary tumor (B) and enlarged lymph nodes were significantly reduced (D). CT = computed tomography.

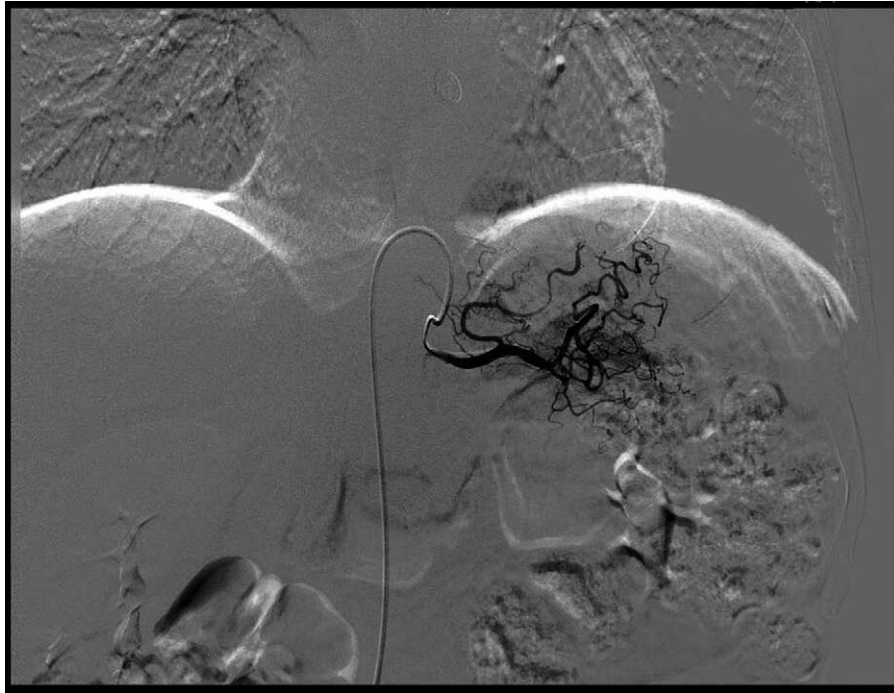


Figure 3. GSPs was injected into the tumor blood vessels under the guidance of DSA. DSA=digital subtraction angiography, GSPs=gelatin sponge particles.

curvature wall of the gastric upper body near the cardia. The gastric serosal surface of lesion was obvious rough with a value of about 40 Hounsfield units, which increased after enhancement (Fig. 2A). CT revealed multiple perigastric lymph nodes enlargement, left gastric artery, and coeliac trunk were surrounded by fused lymph nodes (Fig. 2C). There was no abnormal soft tissue density in the peritoneum, omentum, or mesentery. Based on the above findings, the cancer was clinically staged as cT4aN3M0, stage IIIC according to 8th edition of the union internationale contre le cancer (UICC) guidelines. Radical resection was considered to be difficult owing to the extent of the disease. Hence, oral chemotherapy combined with TACE was initiated. Oral S-1 (100 mg/d) was administered twice a day after meals for 2 consecutive weeks followed by a 1-week rest. TACE was trans-femorally performed and consisted of infusion of etoposide (80 mg/m²) and oshaliplatin (80 mg/m²) in the left gastric artery. Then, 20 mg gelatin sponge particles (GSPs, 350–560 μm in diameter) were injected into the tumor blood vessels under the guidance of digital subtraction angiography (DSA) (Fig. 3). TACE was administered on day 1 and repeated every 4 weeks.

Eight weeks after initial therapy, analysis contrast enhanced CT revealed that the primary tumor (Fig. 2B) and enlarged lymph nodes (Fig. 2D) were significantly reduced. Re-evaluation of the clinical staging suggested the case had been converted into resectable. Radical laparoscopy-assisted total gastrectomy (LATG) with D2 lymph node dissection and Roux-en-Y anastomosis were performed successfully on the patient. The laparoscopic view (Fig. 4) showed no organ metastasis or peritoneum seeding metastasis. The result of intraoperative peritoneal lavage cytology was negative. Specimen examination showed a 4 cm × 5 cm cicatricial lesion located at the lesser curvature wall of the gastric upper body near the cardia with

smooth serosal surface (Fig. 5). Histological analysis of the specimen from the scar revealed no malignancy (Fig. 6). Thirty-one lymph nodes were examined, none of which showed metastasis. Thus, we diagnosed the patient with a pCR (ypT0N0M0). The postoperative course was favorable, and the patient was discharged on postoperative day 11. The patient underwent S-1 adjuvant chemotherapy and has had no recurrence for 6 months until now.

3. Discussion

Both National Comprehensive Cancer Network Treatment Guidelines and Japanese gastric cancer treatment guidelines recommend palliative chemotherapy based on 5-fluorouracil or

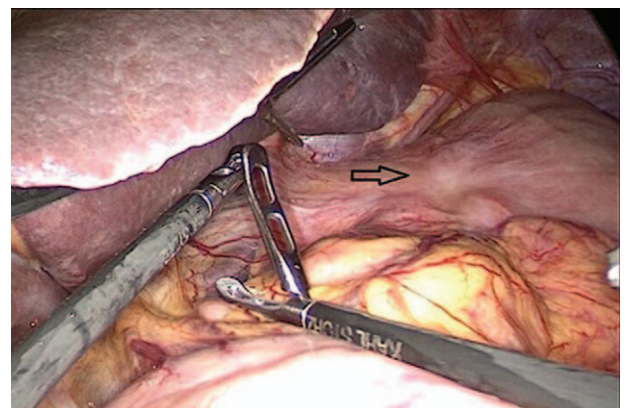


Figure 4. The laparoscopic view showed the gastric serosal surface of lesion was smooth.

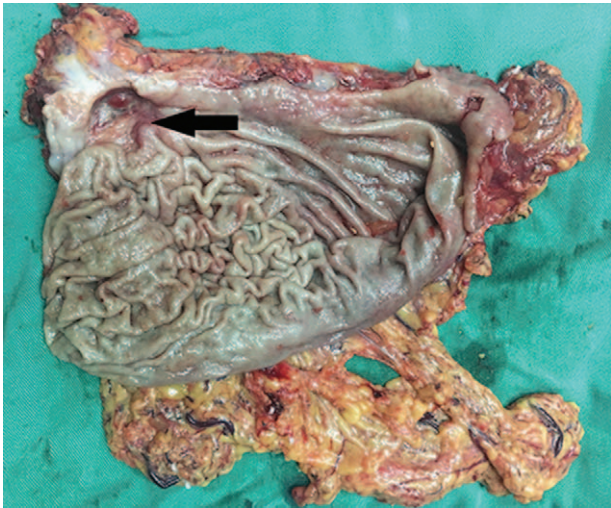


Figure 5. Specimen examination showed a 4 cm × 5 cm cicatricial lesion located at the lesser curvature wall of the gastric upper body near the cardia.

paclitaxel as the standard treatment methods for unresectable gastric cancer. Fortunately, some recent clinical studies revealed that many unresectable gastric cancer patients could be converted into resectable cases after conversion therapy included systemic chemotherapy, radiotherapy, TACE, HIPEC and so on. The additional radical surgery for these cases significantly prolongs the overall survival time and improves their quality of life.^{16,71}

The conversion treatment for unresectable gastric cancer was firstly reported in 2004 by Cascinu et al.¹⁸¹ However, due to the low conversion rate, investigation of conversion therapy in the field of gastric cancer treatment remained at the level of small-sample studies in a long time. Benefiting from the recent great progress in chemotherapy for gastric cancer, conversion therapy based on systemic chemotherapy has achieved a high efficacy in locally-advanced unresectable gastric cancer patients. Sym et al⁹¹ reported 36 (74%) of the 49 locally-advanced unresectable gastric cancer patients underwent surgery, and 31 (63%) had an R0 resection after 4 to 6 cycles neoadjuvant chemotherapy with docetaxel, cisplatin, and capecitabine.

In this case, oral chemotherapy combined with TACE were performed which was rarely reported in the treatment of gastric cancer. The patient achieves a pCR and several mechanisms may underlie the great therapeutic benefit. Embolization of the tumor blood vessels by TACE reduces the blood supply, achieving the goal of treatment. Meanwhile, the combination of perfusion chemotherapy and oral chemotherapy effectively exterminate the residual cancer cells of the original lesion and lymph node metastasis. Noteworthy, although the primary tumor and enlarged lymph nodes were significantly reduced after conversion treatment, it did not completely disappear on the second CT scan. It indicates that for gastric cancer patients who underwent conversion therapy, enhanced CT may not be absolutely accurate in the staging of yield TNM.

In conclusion, although further clinical studies will be needed to establish, this case indicates that for unresectable gastric cancer patients, oral chemotherapy of S-1 combined with TACE may be a potent strategy for degrading stage and supplying a new chance for surgery.

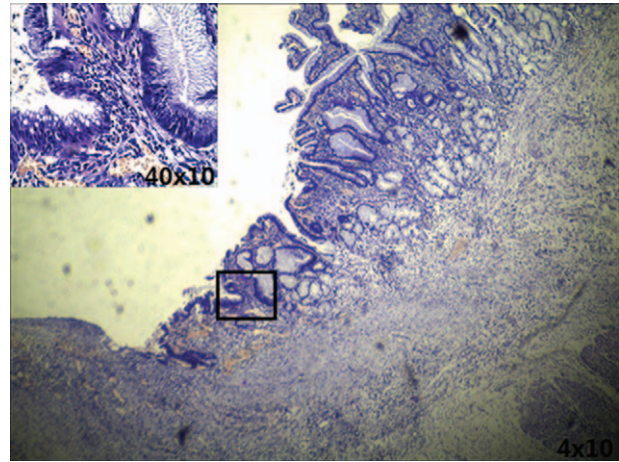


Figure 6. Histological analysis of the specimen from the scar revealed no malignancy.

Author contributions

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