

Conversion therapy combined with R0 resection for stage IV gastric cancer

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Abstract: A 20-year-old woman with stage IV gastric cancer with ovarian and peritoneal metastases was treated using conversion therapy combined with R0 resection, and had satisfying outcomes. The conversion therapy regimen was oophorectomy of Krukenberg tumor combined with hyperthermic intraperitoneal chemotherapy (HIPEC) and systemic chemotherapy. After oophorectomy combined with two cycles of HIPEC and three cycles of systemic chemotherapy, peritoneal metastases were significantly reduced compared with the previous. R0 resection was performed on April 2, 2015. Two cycles of HIPEC and three cycles of systemic chemotherapy were performed after surgery. No sign of recurrence was observed during the 5 months of postoperative follow-up.

Keywords: Stage IV gastric cancer; conversion therapy; R0 resection

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Gastric cancer is a worldwide problem, and its incidence is the second most only following lung cancer, especially in East Asia. In China, gastric cancer is one of the most common malignant tumors, and the primary cause of cancer deaths (1). About 1/3 of patients have distant or peritoneal metastasis when they are diagnosed (2). The standard treatment for patients with metastatic gastric cancer is systemic chemotherapy. The median overall survival (OS) of patients who with distant metastases and only underwent systemic chemotherapy ranges from 8 to 13 months (3,4). Perioperative chemotherapy combined with R0 resection of primary and metastatic tumors can significantly improve the survival of stage IV gastric cancer patients (5-7). This video describes the procedure of conversion therapy combined with R0 resection for a young woman with ovarian and peritoneal metastases, and had satisfying outcomes.

A 20-year-old woman was hospitalized due to “abdominal distension for more than 1 month” on December 2, 2014. Gastroscopy suggested a solid ulcer at the greater curvature of the gastric body, and endoscopic biopsies suggested signet ring cell carcinoma of the gastric body. Abdominal CT scan suggested thickening wall of greater curvature

of gastric body, and a small amount of peritoneal effusion. Pelvic MRI showed: a huge mass on the right ovary. Tumor markers: CA-125 265.10 U/mL, CA19-9 1,856.41 U/mL. Clinical diagnoses: stage IV gastric cancer with ovarian and peritoneal metastases. On December 16, 2014, the first laparoscopy was undergone: moderate yellowish turbid ascites in abdominal and pelvic, a huge Krukenberg tumor of right ovary, and quadrant patchy peritoneal metastases of left lower abdomen. Then, the right oophorectomy was undergone. Hyperthermic intraperitoneal chemotherapy (HIPEC) was performed in the first and third day of the operation, respectively. After that, three cycles of TS chemotherapy were delivered on January 16, February 11, March 4, 2015, using the regimen of Taxol 240 mg and S1 60 mg bid po d1-14, repeated for 3 weeks. After the chemotherapy courses, the CT scan suggested ascites significantly reduced compared with the previous. On April 2, 2015, the second laparoscopy was undergone: ascites disappeared and peritoneal metastases were less noticeable. Total gastrectomy with D2+ lymph dissection was performed under general anesthesia on the same day.

During the surgery (*Figure 1*), the patient was placed in



Figure 1 Conversion therapy combined with R0 resection for stage IV gastric cancer (8).

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a supine position. Following general anesthesia, a middle upper abdominal incision was made from the xiphoid down to the umbilicus. Kocher maneuver: the peritoneum was divided at the lateral border of the duodenum and the duodenum was freed. The incision continued downwards to the hepatic flexure of the colon to expand the surgical field. Sharp dissection was performed along the posterior region of the duodenum and the pancreas to reveal the inferior vena cava, the beginning part of the left renal vein, and the right ovarian vein. The anterior lobe of the transverse mesocolon and the pancreatic capsule were completely separated to the hepatic flexure of colon on the right side and to the lower pole of the spleen on the left side, so that the omental bursa could be completely removed.

The lymph nodes in the inferior area to the pylorus were dissected along the course of the middle colon vein towards its root, and the superior mesenteric vein (SMV) anatomy, as well as the Henle trunk and accessory right colic vein, was freed from the inferior region of the pancreatic neck. The No. 14v lymph nodes were dissected around the SMV. The separation continued towards the pylorus to free the right gastroepiploic vein and the anterior superior pancreaticoduodenal vein. So that the structure of the Henle trunk formed jointly by the right gastroepiploic vein, anterior superior pancreaticoduodenal vein and accessory right colic vein were clearly visible. The right gastroepiploic vein was ligated and cut before its junction with the pancreaticoduodenal vein. The separation continued towards the pylorus to free the right gastroepiploic artery, which was then ligated and cut at the root. The inferior pyloric artery from the gastroduodenal artery was then

separated, ligated and cut. The lower edge of the duodenum and the pylorus was completely denuded to for the complete dissection of the No. 6 lymph nodes.

The left gastroepiploic artery was separated, ligated and cut from the lower pole of the spleen, followed by dissection of the No. 4sb lymph nodes. Splenic hilar lymph nodes dissection *in situ*: separated from the lower lobe peripheral vascular begin to the main splenic artery directions, then separated the upper lobe peripheral vascular of splenic artery, and the No. 10 lymph nodes were completely dissected. The fascia over the upper edge of the pancreas was opened to reveal the splenic artery, for the dissection of the No. 11d and 11p lymph nodes. It should be noted that there were several curves along the splenic artery to the splenic hilum, especially the largest one of 3 to 4 cm to the root, which was hidden behind the pancreas with lymph nodes inside that should not be omitted. After dissection of the No. 11d and 11p lymph nodes, the separation was continued towards the left diaphragmatic muscle to dissect the lymph nodes to the left of the celiac artery and cardia.

The stomach was flipped down to the inferior side, and the anterior peritoneum of the hepatoduodenal ligament was opened. The proper hepatic artery and the right gastric artery were divided, and the latter was ligated and cut at the root. The No. 5 lymph nodes were dissected. The upper edge of the duodenal bulb was completely denuded. The duodenum was transected 3 cm below the pylorus, with the duodenal stumps closed with reinforced stitching.

Dissection of the hepatoduodenal ligament: the lymph nodes surrounding the proper hepatic artery (No. 12a) were dissected. The common bile duct was separated, and the surrounding lymph nodes were dissected (No. 12b). Caution was made to protect the supplying vessels to the common bile duct. The portal vein to the posterior area was separated, and the surrounding lymph nodes (No. 12p) were dissected.

Dissection of lymph nodes posterior to the pancreatic head (No. 13): these lymph nodes often attached closely to the pancreatic head in a flat shape. An electrocautery was required in the sharp separation, with caution to avoid the retroduodenal artery. In some cases, these lymph nodes would be closely adhesive to that small artery, so it could be separated first to prevent bleeding. The No. 13, 12b and 12p were pushed to the right through the Winslow's hole and retracted from the left side of the hepatoduodenal ligament. These lymph nodes were then separated along the common hepatic artery and the upper edge of the splenic

vein towards the celiac trunk. The No. 8a and 8p were dissected en bloc. The coronary vein was divided from the posterior region closing to the root of the common hepatic artery, and then ligated and transected. The lymph nodes to the right of the celiac artery (No. 9) were then dissected along the plane of the right crus of the diaphragm. The left gastric artery was denuded from the periphery, ligated and cut at the root, and station No. 7 lymph nodes were dissected. The separation was continued along the right crus of the diaphragm towards the cardia to dissect the lymph nodes on its right and posterior side (No. 1). The lymphatic adipose tissue was completely denuded around the lower esophagus. The lower esophagus was transected 3 cm upper of the cardia. The total stomach was removed together with the lymph nodes.

Reconstruction: the Roux-en-Y esophagojejunostomy and jejunojunostomy with 25-mm circular stapler.

The whole operation lasted 3 hours and 10 minutes. Two cycles of HIPEC was performed in the first and third day after surgery respectively. The patient was discharged 8 days after surgery. Postoperative pathology: ulcer type signet ring cell carcinoma of the greater curvature of gastric body, invaded to serosa fiber, fat tissue, nerve recidivism, with 1/37 lymph nodes metastasis.

Three cycles of systemic chemotherapy were delivered on May 15, June 10, July 8, 2015 after surgery, using the regimen of Taxol 240 mg and S1 60 mg bid po d1-14, repeated for 3 weeks. No sign of recurrence was observed during the 5 months of postoperative follow-up. The tumor marker CA19-9 has remained at a low level.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest

to declare.

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