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Case Report

A case of gastric adenocarcinoma metastasis to the esophagus possibly caused by gastroscopy or gastric reflux

Dan Zhou[1*], Xiaozhi Yuan[1*], Xinshuai Wang[1*], Jing Ren[1], Ruina Yang[1], Guoqiang Kong[1], Ruinuo Jia[1], Jiangman Li[2], Dongfeng Ge[2], Xuan Zhang[3], Shegan Gao[1]

[1]*Oncological Center, The First Affiliated Hospital of Henan University of Science and Technology, Luoyang 471002, Henan, China;* [2]*Department of Pathology, The First Affiliated Hospital of Henan University of Science and Technology, Luoyang 471002, Henan, China;* [3]*Department of Radiology, The First Affiliated Hospital of Henan University of Science and Technology, Luoyang 471002, Henan, China.* [*]*Equal contributors.*

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Abstract: Recurrence after curative resection for gastric cancer is high, the pattern of recurrence include haematogenous metastasis, peritoneal metastasis, lymph node metastasis, and local recurrence, respectively [1]. Here we report a case with local recurrence at the beginning, and subsequent metastasis to the esophagus three month following gastroscopy. Biopsy of the nodule in the upper esophagus was taken, pathology showed the adenocarcinoma of gastric origin. CT scanning showed no thickening of upper esophagus wall, suggesting there may not be intramural metastasis. The patient had proven gastroesophageal reflux, and the liner alignment of the lesion coexisted with the route of gastroscope insertion tube. Taken together, we suggest that the esophagus metastasis was most likely though implantation caused by gastroscopy or gastroesophageal reflux.

Keywords: Gastric adenocarcinoma, metastasis, esophagus, gastric reflux, gastroscopy

Introduction

Recurrence after curative resection for gastric cancer is high, the most frequent pattern of recurrence was peritoneal, recurrence, hematogeneous, locoregional, and to a distant lymph node [1]. However, metastasis to the upper esophagus has been rarely reported.

Gastrectomy frequently lead to significant gastroesophageal reflux and, subsequently, to varying degrees of esophagitis [2]. There has been rare reports in which gastric reflux facilitate tumor spread to the esophagus, Gastroscopy was routinely performed during the follow-up of gastric cancer patients underwent gastrectomy [3], gastroscopic biopsy a relatively safe tool for the diagnosis of gastric cancer, this is the first case report tumor seeding in the esophagus possibly caused by gastroscopy.

Case report

A 58 year old male was admitted to our hospital complaining of dysphasia in September 2012. Esophagojejunostomy with complete gastrectomy was performed. Surgical pathology shows T4aN3aM0 Stage IIIb tumor with an invasive poor differentiated gastric adenocarcinoma containing scattered signet-ring cells (**Figure 3A**), The baseline chest and abdominal CT (**Figure 1A**) and gastroscopy (**Figure 2A**, **2B**) was performed, reflux esophagitis was observed (**Figure 2A**), the patient did 3 courses of XELOX chemotherapy post-operation, he did not complete the recommend 6 course of adjuvant chemotherapy because of poor PS and intolerance of nausea and vomiting. In Jun 2013, the patient presented for follow-up, a gastroscopy with biopsy was performed to visualize reflux esophagitis (**Figure 2C**) and the recurrence lesion at the Esophagus-Jejunum anastomosis (**Figure 2D**), which is 35 cm from the incision tooth, pathology of the biopsy showed scattered signet-ring cells (**Figure 3B**), no metastasis to the esophagus was observed. The patient refused the recommended chemotherapy and was discharged.

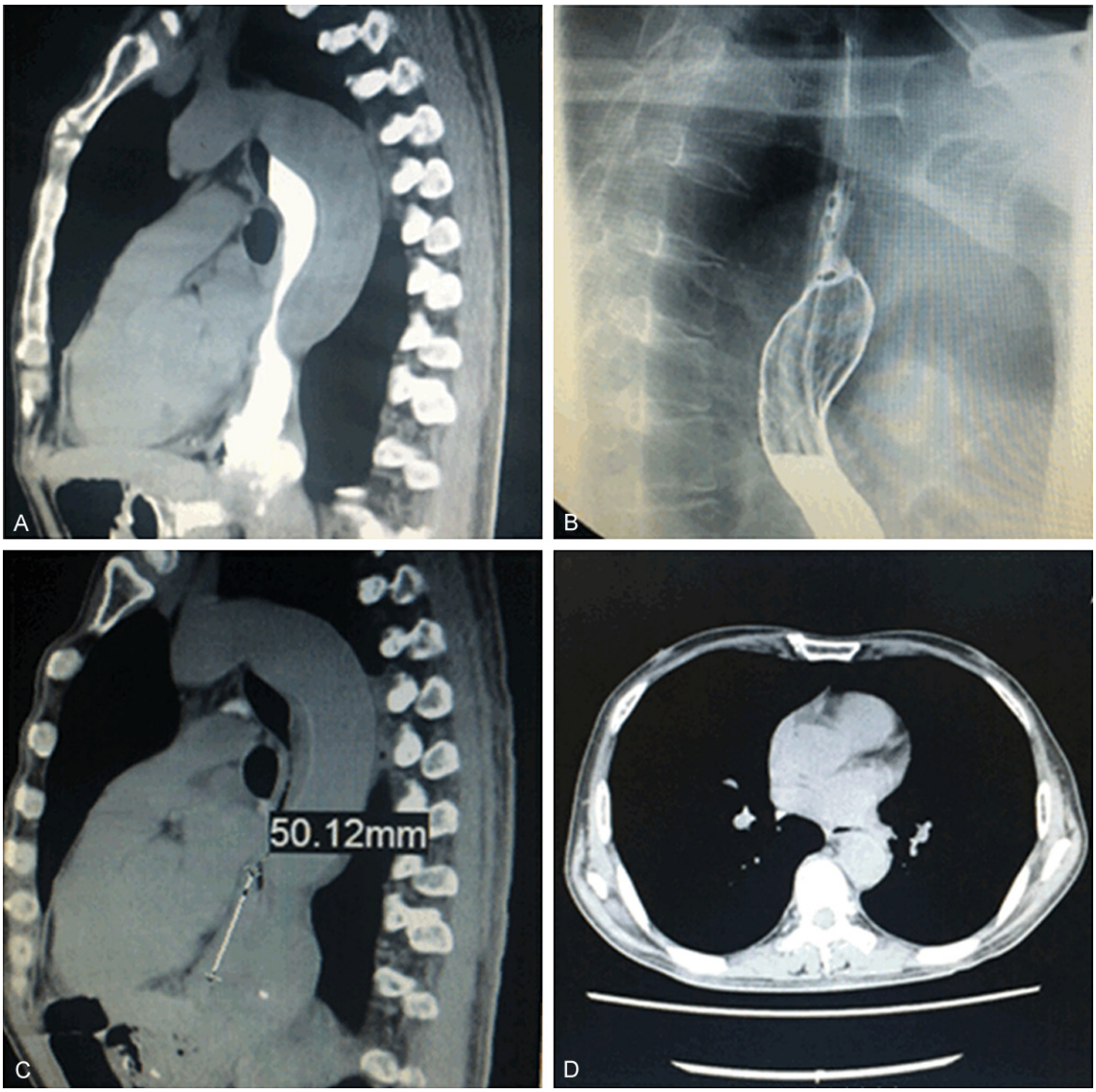

Figure 1. A. The baseline CT of post-operation shows no thickening of the esophagus wall, the contrast agent was observed accumulated to the upper esophagus. B. Barium swallow examination on September 2013 showed beaded oval filling defects above the Esophagus-Jejunum anastomosis. C. CT scan on September 2013 shows thickening of the esophagus wall 5 cm above the Esophagus-Jejunum anastomosis. D. CT scan on September 2013 shows no thickening in the upper esophagus.

The patient admitted again for recurrent dysphasia on Sep 2013, barium swallow study showed beaded oval filling defects above the Esophagus-Jejunum anastomosis (**Figure 1B**), gastroscpy was performed again, and the lesions at were directly observed under gastroscopy 25 cm and 30cm from the incision tooth respectively (**Figure 2E**, **2F**), biopsy of the nodule in the upper esophagus was performed upon the patient's consent, which shows adenocarcinma same to the esophagus-Jejunum anastomosis, CT was performed to compare with the baseline, showing the thickening of the Esophagus-Jejunum anastomosis, and the tumor invades esophagus 5 cm above the anastomosis (**Figure 1C**), the upper esophagus wall remains intact (**Figure 1D**).

Discussion

Endoscopy is a safe procedure in general with few complications, although biopsy induced iatrogenic metastasis of cancer is not uncommon, tumor seeding through endoscopy has never been reported. It has been suggested that

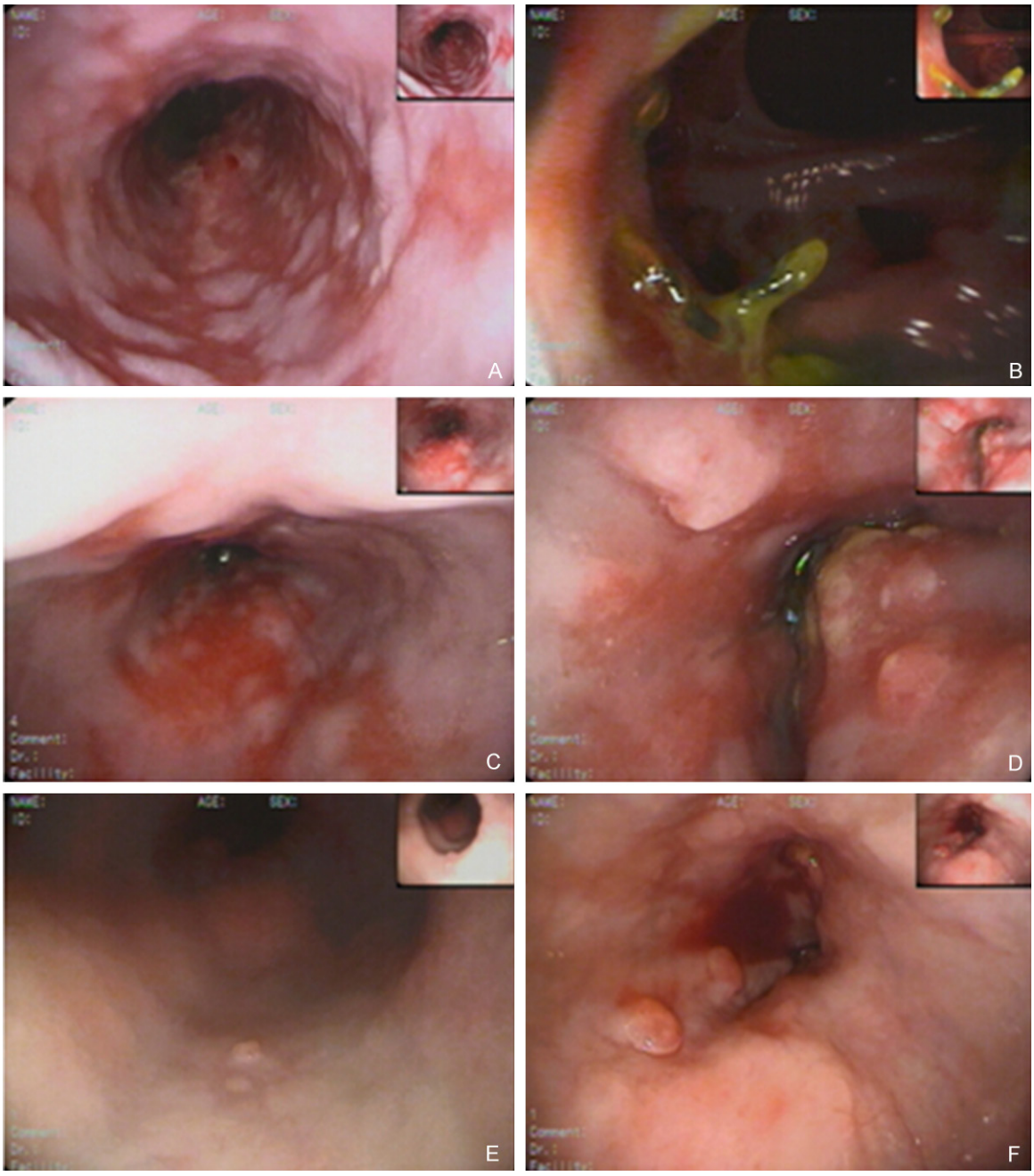

Figure 2. A. Gastroscopy in January 2013 showed reflux esophagitis. B. Gatroscopy in January 2013 showed patent anastomosis, suture thread is abserved. C. Gastroscopy in June 2013 showed Anastomosis stenosis. D. Gastroscopy in June 2013 showed anastomosis with mucosal protrusion, biopsy was taken, resulted showed in **Figure 3C** .

areas of trauma are preferred site of tumor metastasis [4-6]. During fine needle biopsy, where a needle track has been formed, needle tip brings tumor cells to the needle tact, where there is a favorable environment for tumor growth [7]. Although endoscopic insertion tube is not supposed to have direct contact with esophagus mucosa, iatrogenic esophagus injuries were not uncommon during endoscopy procedure, the type of trauma range from minimal injury limited to mucosa to severe perforation. A liner pattern of hemorrhagic mucosa trauma are commonly seen during withdrawal of the endoscope [8], in our case, it is very likely that the tumor seeded into the liner mucosa trauma, either through mechanical contamination

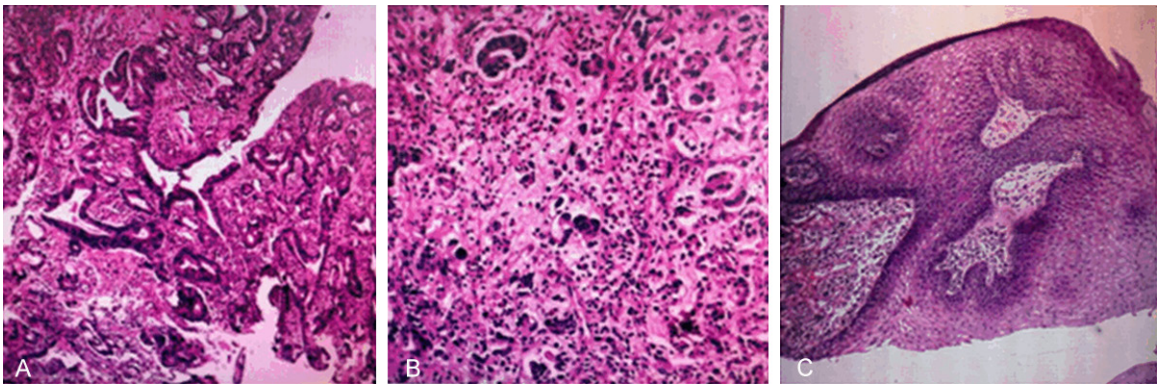

Figure 3. A. Surgical pathology in October 2012 showed poor differentiated gastric adenocarcinoma containing scattered signet-ring cells. B. Gastroscopic biopsy on June 2013 of the Esophagus-Jejunum anastomosis showed adenocarcinoma. C. Gastroscopic biopsy on June 2013 of the upper esophagus showed adenocarcinoma embedded in the esophageal squamous mucosa.

of the endoscope insertion tube or gastroesophageal reflux. Moreover, the pattern of nodules alignment coexisted with the route of the gastroscope, it is very likely that the insertion tube has slide over the esophagus mucosa and brought tumor to sites of lesions.

It has been widely accepted that the risk of developing adenocarcinoma is much higher in Barrett's esophagus; GERD above the Esophagus-Jejunum anastomosis might as well facilitate the growth of metastasis adenocarcinoma. In this case the patient had endoscopy proven reflux esophagitis in the middle-lower esophagus, which is commonly seen in post-gastrectomy patients. Although the seeded tumor cells on esophagus mucosa can be easily washed off by food and liquid, the rough, granular mucosal surface of reflux esophagitis has made tumor cells easily attached. Moreover, it has been proven that chronic inflammation has made a microenvironment favorable for tumor growth [9], which has contributed to the growth of metastatic implantation. There have been two case reports of gastric cancer with esophageal metastasis, in both cases the patients had gastric reflux disease. And both authors speculated that esophageal implantation metastasis from the gastric adenocarcinoma might have taken place by the gastro-esophageal reflux [10, 11]. In our case, one nodule is located 5 cm above the anastomosis where GERD is visualized under gastroscopy (**Figure 2F**), the other one of the nodules is located at the upper esophagus (**Figure 2E**), which is 10 cm above the junction, the upper esophagus mucosa showed no sign of esophagitis, however, in the chest CT scan (**Figure 1A**), we can see contrast agent accumulated in the upper esophagus, which means the reflux liquid may reach up esophagus when the patient was lying down.

According to previous study in Japan, among 4,714 cases of gastric cancer, 29 (0.6%) were histopathological diagnosed with IM. The mean IM size was 1.09 ± 1.10 cm (range, 0.2-6.0 cm) [12]. In another study in Hungry, 6 out of a total of 143 (0.4%) gastric cancer patients were verified to have IM esophageal metastasis, and the distance from the primary tumor of the metastases was 20-50 mm [13], in our case, and the thickening of esophagus wall is 5 cm above the anastomosis in CT scan (**Figure 1C**). Therefore, IM metastasis may have contributed to the nodules closer to the anastomosis, however the nodule in the upper esophagus was most likely caused by gastric reflux or endoscopy.

Conclusion

We suggest that gastroesophageal reflux and iatrogenic contamination or injury though endoscopy is possible reasons of esophagus metastasis of gastric cancer. Patients should be advised to sleep at 45 degree angle to minimize gastric reflux. Gastroscopy providers should be aware of the possibility cancer cells contamination of insertion tube.

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Disclosure of conflict of interest

None.

Address correspondence to: Dr. Shegan Gao, Oncological Center, The First Affiliated Hospital of Henan University of Science and Technology, 24 Jinghua Road, Luoyang 471002, Henan, China. Tel: (+86) 37964815779; E-mail: gsg112258@163.com

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