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Case Report

Synchronous primary gastric diffuse large B cell lymphoma and colorectal cancer: a case report and literature review

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Abstract: Synchronous primary gastric diffuse large B cell lymphoma (PG-DLBCL) and colorectal cancer are extremely rare. A 82-year-old woman was referred to Xiangya Hospital with a history of tarry stool for 10 days and was diagnosed with gastric cancer. During hospitalization, the patient underwent gastroscopy. Under gastroscopy A huge ulcer (4.5×3.5 cm) was displayed in the back wall of gastric antrum and greater curvature. Pathological examination by gastroscope biopsy revealed PG-DLBCL (non-germinal center type) and *Helicobacter pylori* infection. Laparoscopic distal gastrectomy + partial resection of both small intestine and descending colon. Pathological examination revealed a synchronous tumor consisting of PG-DLBCL with lymph node metastasis (1+/3) (Lugano II) and colorectal cancer with poorly differentiated mucinous adenocarcinoma, with lymph node metastasis (5+/7) (T3N2M0, stage IIIC); The patient recovered well, without any obvious complications and was discharged on post-operative day 7. The patient received four cycles of chemotherapy after operation. She has been doing well with no evidence of recurrence for 10 months. Our case suggests a potential link between PG-DLBCL and synchronous colorectal carcinoma, possibly involving *Helicobacter pylori* infection.

Keywords: Synchronous, colorectal cancer, PG-DLBCL

Introduction

Colorectal cancer is one of the most common gastrointestinal tract carcinomas, and it is the third most common cancer and the fourth most common cause of cancer-related death worldwide. PG-DLBCL is common also. No one case of the synchronous colorectal cancer and PG-DLBCL has been reported in English literature. We herein report a case of a 82-year-old woman with synchronous colorectal cancer and PG-DLBCL, who was successfully treated by combined laparoscopic resection and adjuvant chemotherapy.

Case report

A 82-year-old woman was referred to Xiangya Hospital on June 12, 2015 due to tarry stool for 10 days. On admission, she was chronically ill-looking and alert. Her blood pressure was 135/65 mmHg, pulse 70/min, respiration 20/min, and body temperature 36.5°C. Lungs were clear to auscultation and heart examination was normal, without murmur or rubs. Liver and spleen were non-palpable. Slight tenderness on the upper middle abdomen was noted. Laboratory test results showed WBC 6.7×10^3/uL, hemoglobin 8.0 g/dL, glucose 4.3 mmol/L, TP 68 g/L, ALB 39.6 g/L; CA125 41.87 U/mL (normal range: 0-37 IU/mL), and CEA 1.19 ng/mL (normal range: 0-5 ng/mL). Fecal occult blood test was positive (2+). Gastroscopy showed A huge lump (4.5×3.5 cm) in the back wall of Gastric antrum and greater curvature (**Figure 1**); Iodine water imaging of upper gastrointestinal tract showed the stomach like a hook, the

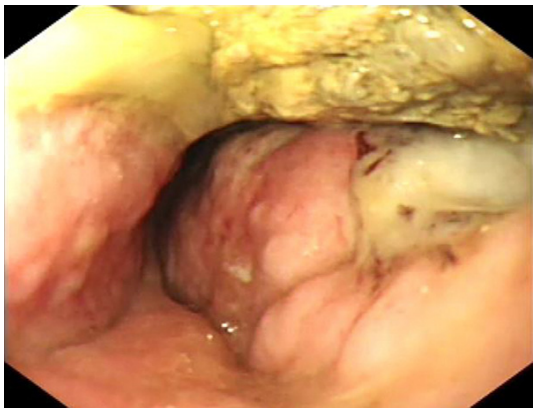

Figure 1. Gastroscopy showed a huge mass (4.5×3.5 cm) in the back wall of Gastric antrum and greater curvature.

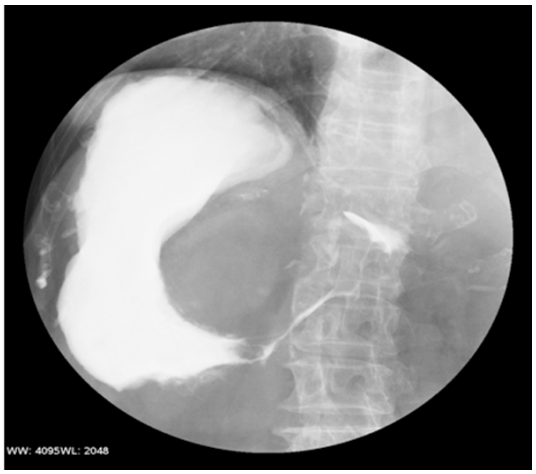

Figure 2. Upper Gastrointestinal iodine water imaging showed the stomach like a hook, the greater curvature side edge of gastric body with obviously filling defect, gastric cavity being obviously narrow, and stiff stomach wall, with peristalsis disappear.

greater curvature side edge of gastric body with obviously filling defect, the edge being not neat, gastric cavity being obviously narrow, and stiff stomach wall, with peristalsis disappear (**Figure 2**). The pathological diagnosis was PG-DLBCL.

PET-CT showed obvious thickening in gastric body and gastric antrum, with an abnormal crumby structure dense shadow, and the largest SUV value was 18.4. She had no remarkable family history. During hospitalization, the patient underwent laparoscopic distal gastrectomy + partial resection of both small intestine and descending colon. Perioperation found a 10 cm×6 cm×4 cm ulcerofungating mass in the back wall of Gastric antrum and greater curvature, not extending to the serosa layer; and a 4 cm×4 cm×2 cm exogenous neoplasm in ileocecal junction. Pathological examinations revealed a colorectal cancer with poorly differentiated mucinous adenocarcinoma (**Figure 3A**), with lymph node metastasis (5+/7) involving the whole layer of ileocecal junction; and a PG-DLBCL (non-germinal center type) (**Figure 3B**), with lymph nodes metastasis (1+/3), being positive for CD20, CD79a, PAX-5, MUM1 and CD5, and 80% positive for Ki67 (**Figure 4**), negative for ALK, EBER, CD3, CD30, CD10, Bcl-2, Bcl-6 and C-MYC FISH, with lymph nodes metastasis (1+/3). The gastric mucosa was also positive for *Helicobacter pylori* (*H pylori*) (**Figure 5**). The patient recovered well, without any obvious complications. The patient received four cycles of chemotherapy after operation. Each cycle of the chemotherapy regimen including: Rituximab 500 mg ivgtt d 1 + cyclophosphamide 200 mg ivgtt d 1 + vincristine 1 mg ivgtt d 1. She has been doing well with no evidence of recurrence for 10 mo.

Discussion

Primary gastric lymphoma (PGL) originates in the stomach itself, with or without perigastric and/or abdominal lymph node involvement [1, 2]. PGL is an uncommon tumor, accounting for less than 15% of gastric malignancies and about 2% of all lymphomas. However, PGL is the most common extranodal lymphoma, representing 30%-40% of all extranodal lymphomas and 60%-75% of all gastrointestinal lymphomas [3-7]. The incidence of PGL is progressively increasing. PG-DLBCL is the most common type of PG-NHL. Gastric antrum is the common location, followed by gastric body and the bottom of the stomach, a few patients involved the whole stomach. Abdominal pain, nausea, vomiting, weight loss, and gastrointestinal bleeding are the main symptom of PG-DLBCL [8-11]. Colorectal cancer (CRC) is one of the most common type of cancer in the world, and its incidence is continuously increasing in China [12, 13]. Global cancer statistics indicate that CRC remains to be the fourth leading cause of cancer-associated mortalities worldwide, responsible for >600,000 mortalities annually [14, 15].

Synchronous adenocarcinoma and lymphoma in the gastrointestinal tract are extremely rare.

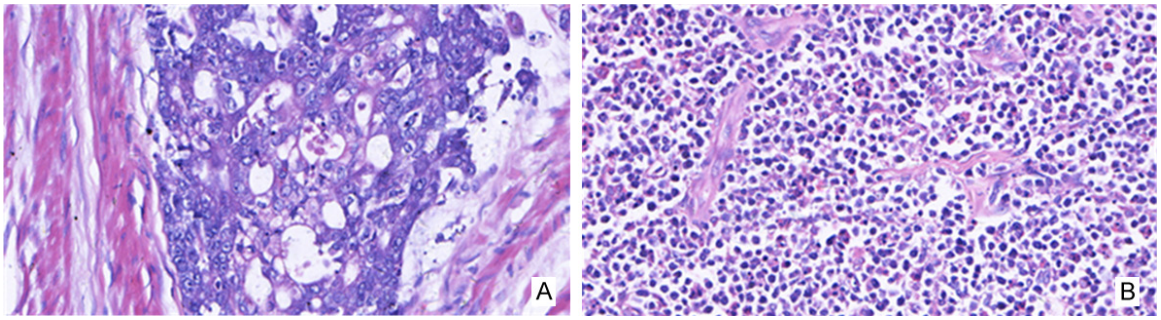

Figure 3. Hematoxylin-eosin (HE) staining of Synchronous primary gastric diffuse large B cell lymphoma and colorectal cancer. A: Poorly differentiated colorectal mucinous adenocarcinoma (×400). B: Primary gastric diffuse large B cell lymphoma (×400).

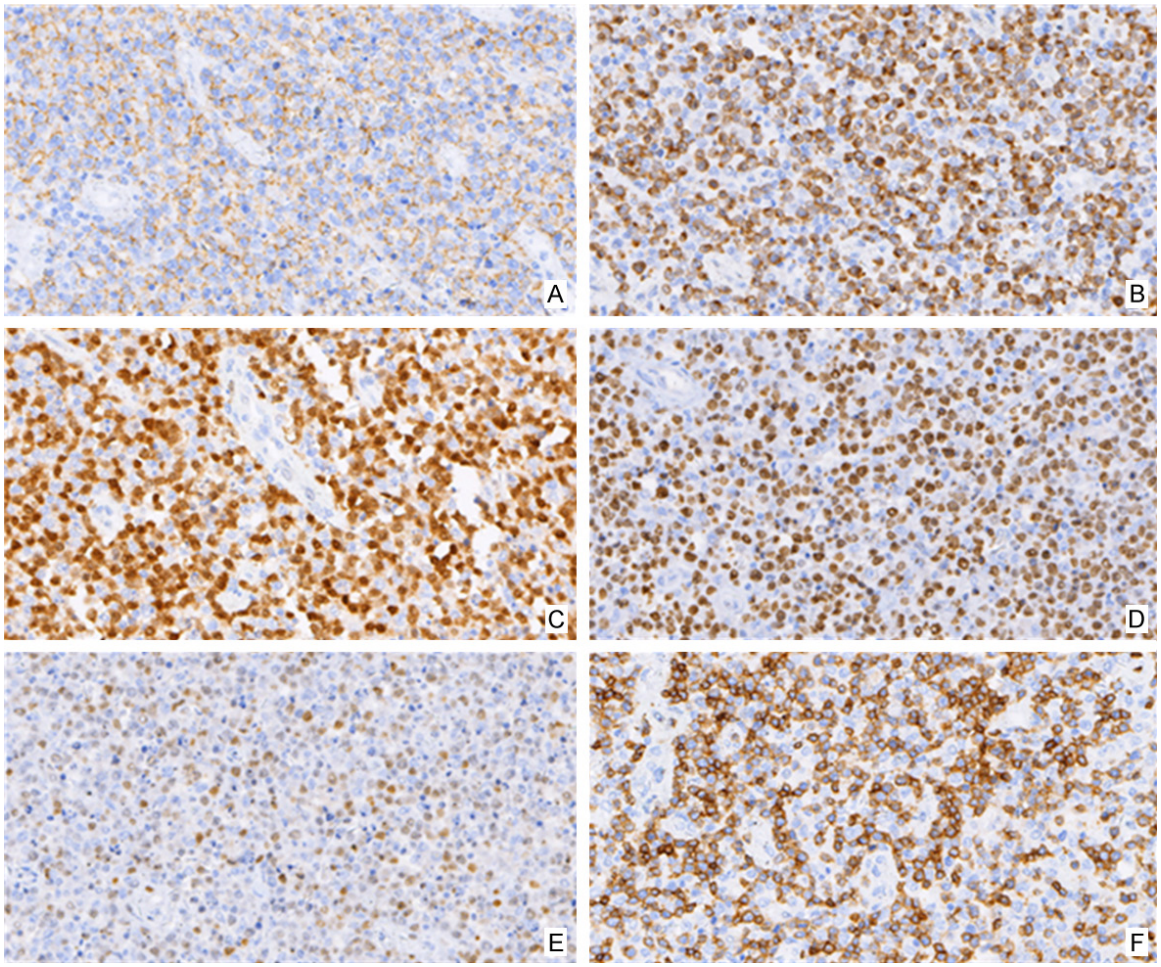

Figure 4. Immunohistochemical staining of primary gastric diffuse large B cell lymphoma cells. A: Positive expression of CD20 in the lymphoma cells located in the cytomembrane (400X); B: Positive expression of CD79a in the lymphoma cells located in the cytomembrane (400X); C: Positive expression of PAX-5 in the lymphoma cells located in the nucleus (400X); D: Positive expression of Ki67 in the lymphoma cells located in the nucleus (400X); E: Positive expression of MUM1 in the lymphoma cells located in the nucleus (400X); F: Positive expression of CD5 in the lymphoma cells located in the cytomembrane (400X).

A 66-year-old male underwent left hemicolectomy for rectal adenocarcinoma. Five years later he was diagnosed as colon diffuse large B-cell lymphoma [16]. A 75-year-old woman

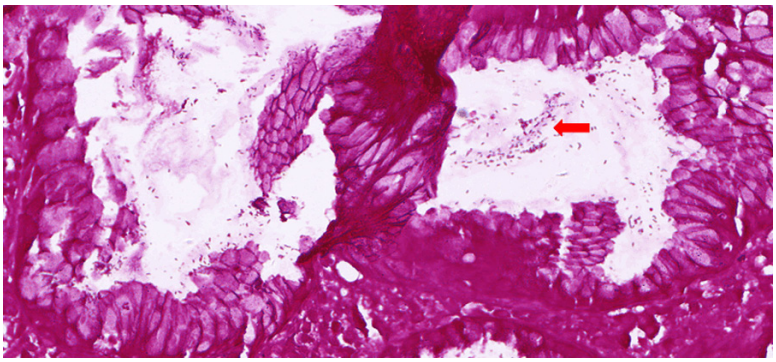

Figure 5. The gastric mucosa was positive for *Helicobacter pylori* in the PG-DLBCL tissues using Carbol Fuchsin staining (400×). The red arrow highlights *Helicobacter pylori*.

was diagnosed as Epstein-Barr virus (EBV)-positive diffuse large B-cell lymphoma (DLBCL) in the right cervical lymph node and early colon cancer [17]. In another paper, a case of secondary diffuse large B-cell lymphoma/leukemia after breast cancer chemotherapy was presented [18]. A case of a 56-year-old woman with breast cancer, ovarian cancer, and diffuse large B-cell lymphoma with a BRCA1 gene mutation was reported [19]. A 49-year-old woman was diagnosed with a synchronous cancer consisting of early gastric cancer with poorly differentiated adenocarcinoma and diffuse large B cell lymphoma of small intestine involving descending colon and bilateral ovaries [20].

However, PG-DLBCL occurring simultaneously with a primary colorectal cancer is extremely rare. For the present case, the patient was diagnosed with PG-DLBCL and primary colorectal cancer based on the pathological results. The postoperative pathologic findings showed that the two lesions were located separately. It implies that the tumor originates from two lesions: one from the back wall of Gastric antrum and greater curvature and the other from the ileocecal junction. We believe that there may be correlations between any diseases, but we cannot rush to conclusions or dismiss a correlation because we understand little about the diseases themselves. The patient received regular chemotherapy subsequently. She has been doing well with no evidence of recurrence. Therefore, once it is determined that a patient has a localized and potentially curable lesion, a multidisciplinary evaluation and multimodality therapy are recommended [21]. In a review of some retrospective studies, it has been reported that surgery combined with postoperative chemotherapy is superior to the chemotherapy or radiotherapy used alone for such patient [22, 23].

In conclusion, our case highlights a rare occurrence of synchronous double malignancies consisting of a PG-DLBCL and a primary colorectal cancer. It is undeniable that this is a special event. For two distinct tumors occur in gastrointestinal track at the same time, it might imply the role of genetic alterations that needs further investigation.

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