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Case Report

Synchronous occurrence of gastric adenocarcinoma and MALT-type lymphoma: A case report and literature review ☆

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ABSTRACT

The coexistence of multiple primary malignant tumors in an organ is rare. This includes the extremely rarely reported combination of gastric adenocarcinoma and gastric MALT-type lymphoma as synchronous tumors. We describe a case of a 72-year-old man diagnosed with this combination. He had no remarkable medical history and came to our hospital because of discomfort in the gastric area. Although the biopsy revealed adenocarcinoma only, the microscopic findings after partial gastrectomy incidentally showed additional lymphoma that was subsequently confirmed by immunohistochemistry as MALT-type lymphoma. This case study and literature analysis aims to raise awareness of the possibility of synchronous malignant neoplasm in the stomach to enhance preoperative diagnosis.

Introduction

Collision tumor is a rare entity composed of 2 different cell components occurring adjacent to one another at the same anatomic site. To our knowledge, fewer than 100 cases of synchronous primary gastric adenocarcinoma and lymphoma have been documented in the English literature, including case reports and series [1]. Preoperative tests may misdiagnose the combined malignant tumor due to nonspecific features on endoscopy and the limitations of small biopsies. Resected gastric specimens are needed to confirm the main tumor and determine whether a synchronous tumor exists. Our case of gastric collision tumor discovered incidentally on surgical pathology encourages a more cautious approach to the examination and follow-up of gastric malignancy patients. We

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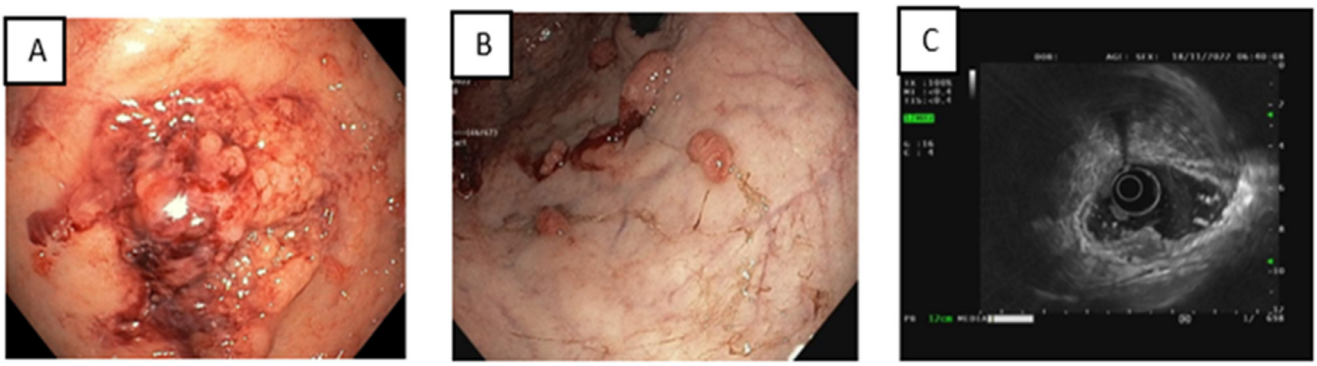

Fig. 1 – Endoscopic images. A large polypoid lesion with an irregular border and hemorrhage on the surface (A, arrow). In addition, some small polyps were found in the adjacent mucosa (B, arrow). The endoscopy ultrasound window was suspicious for muscularis propria invasion (C).

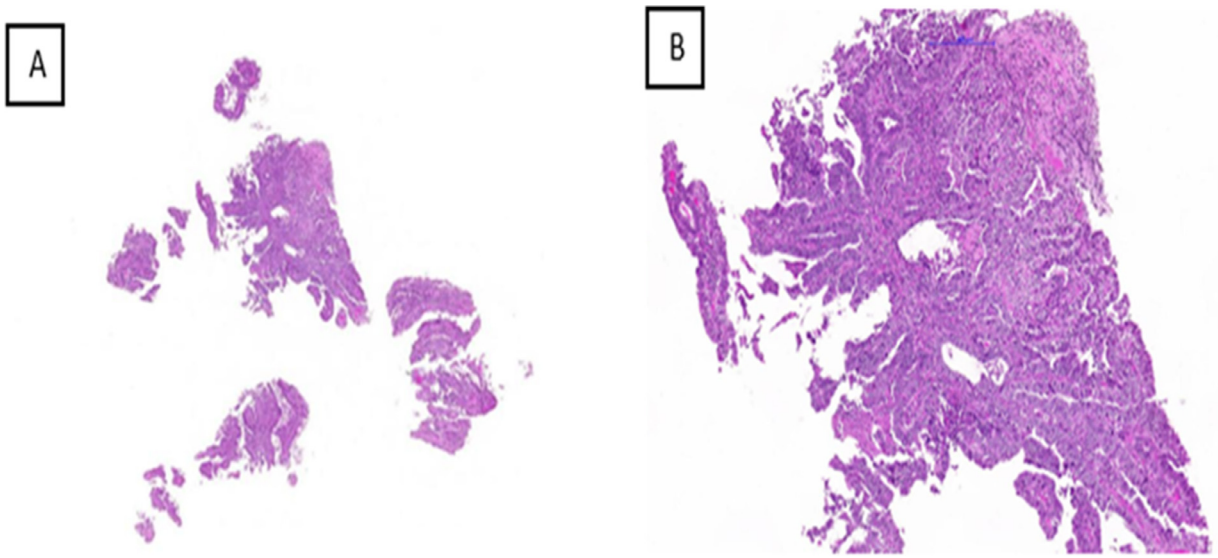

Fig. 2 – Microscopic images from biopsy specimen (H&E stain). At low magnification, all gastric mucosa fragments revealed features of adenocarcinoma only, without lymphoid aggregations (A). At higher magnification, the tumor was composed of malignant epithelial cells arranged in irregular tubules invading the stroma (B).

also discuss the potential etiologies of and therapeutic strategies for this rare disease.

Case report

A 72-year-old Vietnamese man was admitted to our hospital because of vague abdominal pain. The past medical history showed hypertension, gallstones and diabetes and no predominant symptoms of gastric cancer. Gastric ulcer or HP infection has not been noticed. An endoscopy revealed multiple polypoid lesions (Fig. 1A and B). The remaining gastric mucosa was unremarkable. The most suspicious area was sampled for pathological examination and diagnosed as adenocarcinoma (Fig. 2). Endoscopic ultrasound staging showed that the tumor was at T2N1 (Fig. 1C). Localized wall thickening and a well-enhanced lesion were visible on an abdominal CT scan at the larger curvature of the gastric body, with no nearby fatty infiltration; uneven wall thickening and a well-enhanced lesion were visible at the lesser curvature and the cardia (Fig. 3).

Gross examination showed a 2.5-cm irregular fungating tumor that grossly did not invade through the muscularis propria. In addition, several polypoid masses were identified. The remainder of the mucosa showed mild swelling and fewer folds with a smooth surface. In the attached perigastric adipose tissue, approximately 40 lymph nodes were submitted.

On microscopic sections, 2 distinctive tumor populations were observed. The first component was adenocarcinoma with intestinal type, moderate differentiation, located on the superficial surface. The second was composed of abundant neoplastic lymphocytes with angulated nuclear contours and inconspicuous nucleoli, with invasion to the muscularis propria layer. Other polypoid masses, normal-looking mucosa, and most lymph nodes also showed abnormal lymphoid cell involvement. Immunohistochemical staining of paraffin-embedded tissue showed positivity with CD20 and BCL2 and negativity with CD3, CD5, CD10, BCL6, and CyclinD1 in the

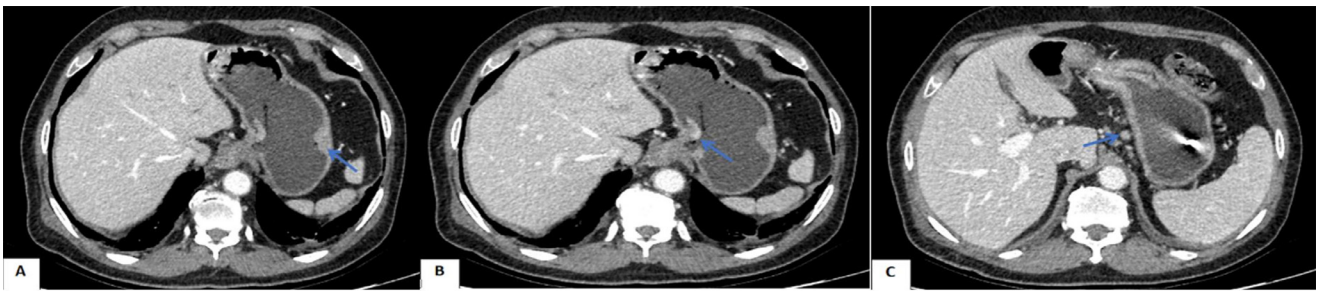

Fig. 3 – Axial abdominal CT scan at portal vein phase. (A) Focal wall thickening and a well-enhanced lesion at the greater curvature of the gastric body (arrow), without fatty infiltration adjacent. (B) Irregular wall thickening and a well-enhanced lesion at the lesser curvature and the cardia (arrow). (C) Enlarged lymph nodes at the lesser omentum (arrow), suggestive of lymph node metastasis.

lymphoid population. It showed a positive reaction with CDX2 in the epithelial population (Fig. 4). This case was thus classified as a synchronous, moderately differentiated adenocarcinoma and MALT lymphoma with a collision appearance.

The patient was performed gastrectomy. He developed an abscess at the sugery site a week later which required him to be treated at ICU for several days. Following his recovery from the complication, a Rituximab regimen was given for him for 4 weeks and noticed a complete response. There have been currently no signs of recurrence or potential complication after 6 months of follow-up.

Discussion

Collisional tumors, first described by Meyer in 1919, are 2 distinct tumor forms in the same organ that touch or partially invade one another [2]. Lymphoma is not very prevalent in the stomach, where carcinoma predominates [3,4]. Although mucosa-associated lymphoid tissue lymphoma is the most common type of gastric lymphoma, relatively few reports exist of it occurring with adenocarcinoma [1,4–6]. Schuback et al. [7] reported the first case in 1931. Little has been written on the epidemiology of this stomach collision tumor due to its uncommon incidence. The average age, without regard to sex predilection, was 67 in the East and 60 in the West, according to a survey of the literature [1].

Regarding etiology, *Helicobacter pylori* infection is thought to play a significant role in both tumors. *H. pylori*–associated gastritis is believed to be the primary pathogenic cause of the simultaneous development of gastric epithelial and nonepithelial lesions [6,8–10]. In a study of 32 synchronous instances, Chan et al. [1] found that 78% had *H. pylori* infection. The association between *H. pylori* and adenocarcinoma has been researched for decades through various mechanisms, but clinical recognition of this association appears poor. On the other hand, due to the striking tumor regression following *H. pylori* eradication, a substantial correlation exists between MALT-type lymphoma and *H. pylori* [10]. Although the *H. pylori* prevalence in gastric cancer is around 50%, it dramatically increases to 90% in MALT tumors [9]. Even on the Giemsa stain, *H. pylori* was not found in our case, although chronic inflammation and intestinal infection are indirect indicators of *H. pylori* infection. This is presumably due to the difficulty in identifying this bacterium because of tumor necrosis or apoptosis fragments on the epithelial surface or glands.

Gastric cancer is often identified on endoscopy by ulcerative, polypoid, infiltrative lesions with irregular boundaries or hemorrhagic surfaces, whereas the mucosal alterations linked to MALT-type lymphoma are not specific or mimic gastritis [11]. In Fischbach's study of 266 patients with primary gastric lymphoma, 2% of cases had normal endoscopies [12]. In our case, it was reasonable to assume that a large polypoid mass and several small polyps were carcinoma rather than lymphoma. Because lymphoid aggregations are found underneath the epithelium, lymphoma seldom significantly alters the mucosa and may go undetected during endoscopy.

Due to endoscopy's limitations, histopathology results are crucial in verifying the ultimate diagnosis. Collision tumors are usually detected during pathological examination of resected specimens [13]. A tiny biopsy has the drawback of not necessarily representing the whole lesion. By grossly examining large, resected specimens, pathologists can recognize suspected regions of both carcinoma and lymphoma. Therefore, surgical sections may reveal a second tumor that was not collected during the biopsy. When lymphoma is suspected, immunohistochemical testing may be required to confirm the diagnosis. Adenocarcinoma can be diagnosed by H&E stain alone, but in our case, the MALT component had to be confirmed by B cell marker reactivity.

Partial or complete gastrectomy with lymphadenectomy is the curative therapy for gastric cancer. This has a few uncommon problems, including perforation or excessive bleeding. However, vigorous surgical resection is no longer the first treatment option for stomach lymphoma. No matter what stage of lymphoma a patient has, *H. pylori* eradication is favored [6,14]. The positive outcomes of *H. pylori* treatment may support the idea of a significant link between *H. pylori* and MALT-type lymphoma. In instances of *H. pylori*–negative gastric MALT-type lymphoma or non-response to *H. pylori* eradication, immunotherapy with anti-CD20 monoclonal antibodies is also efficacious and safe [6,15,16]. Treatment plans for both carcinoma and lymphoma must be integrated for this sort of collision tumor. However, some researchers have indicated that the outcome of this rare disease mostly depends on the status of adenocarcinoma rather than MALT lymphoma [6].

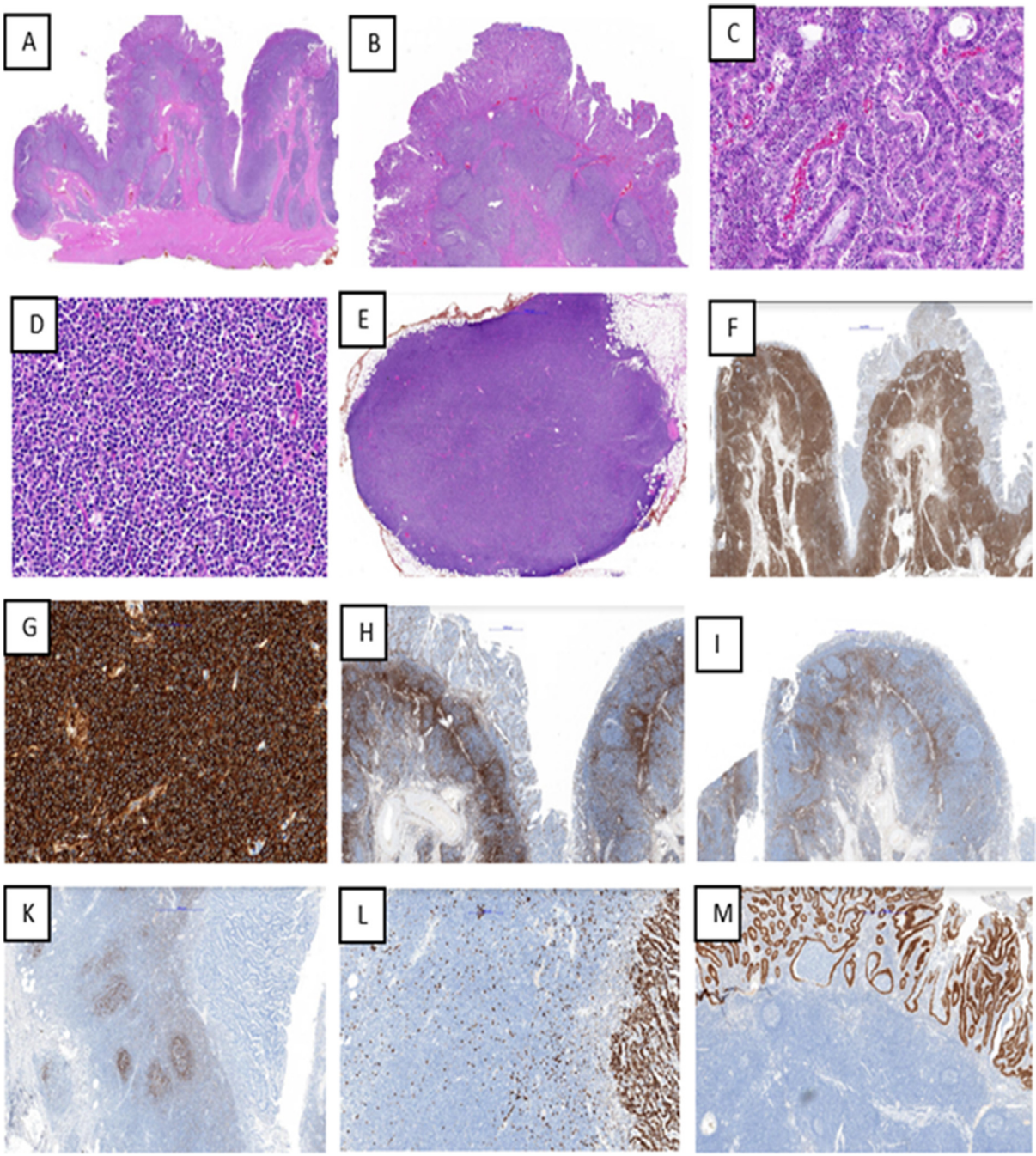

Fig. 4 – Microscopic images from surgical specimen (H&E and immunochemistry stain). On H&E stain: Two different neoplastic cell populations were observed at low magnification. An epithelial tumor had developed superficially while a lymphoid tumor grew beneath and spread to the muscularis propria (A, B). Moderate differentiation of adenocarcinoma with tubular formation, marked pleomorphism cells, hyperplastic nuclei, and necrosis (C). Proliferation of monotonous lymphoid cells characterized by small to medium size, slightly irregular nuclear contours, condensed chromatin, inconspicuous nucleoli, and pale cytoplasm (D). Regional lymph nodes were completely effaced by malignant lymphoid cells, but with no adenocarcinoma metastasis (E). On immunohistochemistry stain: Neoplastic B cells revealed strong, diffuse positivity with CD20 (F, G) and negativity with CD3 (H) and CD5 (I). CD21 was negative for tumor cells and reacted with some retained meshworks of follicular dendritic cells (K). Ki67 staining showed low index proliferation in the lymphoma area but a high rate in the carcinoma area (L). Epithelial tumor cells reacted positively with CDX2, whereas lymphoid tumor cells reacted negatively (M).

Conclusion

Synchronous gastric adenocarcinoma and MALT lymphoma is extremely rare and infrequently diagnosed on endoscopy. For confirmation, surgical pathology with immunohistology is required. Since *H. pylori* is thought to be significantly connected, eradicating it should be part of the treatment, along with surgery and other methods. Despite the existence of 2 cell populations, the prognosis primarily depends on how the adenocarcinoma behaves.

Authors' contribution

Vu-Thi P and Dau QL contributed equally to this article as first authorship. Vu-Thi P, Dau QL, and Nguyen MD: Case file retrieval and case summary preparation. Vu-Thi P, Dau QL, and Nguyen MD: preparation of manuscript and editing. All authors read and approved the final manuscript.

Availability of data and materials

Data and materials used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

Our institution does not require ethical approval for reporting individual cases or case series.

Consent for publication

Not applicable.

Patient consent

Informed consent for patient information to be published in this article was obtained.

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