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Case Report

Case report of rare primary gastric large B-cell lymphoma ☆

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ABSTRACT

Gastric large B-cell lymphoma is rare and can be challenging to diagnose due to its non-specific presentation. Primary gastric large B-cell lymphoma is rare, especially compared to systemic disease with gastric involvement. In this case, an 85-year-old female was brought to the ER with abdominal pain, as well as a history of nausea, constipation, and weight loss. CT imaging showed thickening of the anterior wall of the stomach accompanied by inflammatory changes. Esophagogastroduodenoscopy revealed a 7-8 cm "half circumferential necrotic" ulcer suggestive of malignancy. Biopsy confirmed this to be gastric large B-cell lymphoma. Subsequent PET-CT showed no metastasis. This case illustrates the value of imaging in diagnosing this unusual condition.

Introduction

Gastric large B-cell lymphoma is an uncommon cancer that presents a diagnostic challenge. It presents with vague symptoms, including nausea, vomiting, and indigestion [1]. Because of this, imaging plays a crucial diagnostic role. The incidence of gastric large B-cell lymphoma is 7/100,000 [2]. While esophagogastroduodenoscopy (EGD) with biopsy remains the gold standard for diagnosis, computed tomographic (CT) imaging is useful in narrowing the differential as well as in distinguishing lymphoma from the more common gastric adenocarcinoma [1,3]. Imaging also plays a key role in staging: primary gastric large B-cell lymphoma can be staged using (positron-emission tomography) PET-CT; this contrasts with (mucosa-associated lymphoid tissue) MALT gastric lymphoma, which is not staged with PET-CT due to the indolent nature of the disease course [1]. In the presented case, the patient presented with nonspecific symptoms, which were investigated with CT imaging, the diagnosis confirmed with EGD and biopsy, and staging was conducted with PET-CT, demonstrating the utility of radiographic imaging.

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Case presentation

An 85-year-old female was brought into the Emergency Department (ED) by her daughter for severe lower left quadrant pain. The patient described the pain as intermittent for the prior several weeks, but, upon awakening that morning, the pain was so severe she requested her daughter take her to the ED.

The patient had both hypertension and hyperlipidemia, for which she took aspirin, simvastatin and triamterene-hydrochlorothiazide. The patient's daughter reported the patient was in generally good health but did not regularly see a primary care physician. The patient reported some mild constipation but no change in stool pattern, melena or hematochezia. The patient reported never having a colonoscopy or esophagogastroduodenoscopy. The patient had a surgical history of cholecystectomy and right nephrectomy secondary to trauma.

Upon presentation to the ED, the patient reported near resolution of pain that prompted her visit. Vitals were: Heart rate 80/min; BP 120/62; respiratory rate 15; and temperature 36.9 C. Review of systems revealed fatigue and weight loss over the preceding months with abdominal pain, constipation and nausea, but no anal bleeding, melena, diarrhea or vomiting reported. All other ROS findings were unremarkable. Physical exam revealed decreased breath sounds in all lung fields and dry, warm skin with noticeable pallor. All other findings were unremarkable, including normal bowel sounds. Tables 1 and 2 demonstrate laboratory values.

CT imaging of abdomen and pelvis revealed ulcerated thickening and enhancement of anterior wall body of the stomach with inflammatory changes in the adjacent fat, suggesting a possible benign gastric ulcer; however, malignancy could not be excluded (Fig. 1). EGD was recommended by the dictating radiologist.

EGD was performed the next day to obtain samples for biopsy. During endoscopy, an "at least half circumferential necrotic ulcer" measuring approximately 7-8 cm was noted on the anterior wall of the gastric body. It was not actively bleeding and was worrisome for a malignant ulcer. Ten samples were taken from the necrotic ulcer for biopsy. The fundus, antrum and proximal duodenum were visualized and appeared normal. An incidental hiatal hernia was also discovered during endoscopy. Biopsy samples were submitted to pathology.

The biopsy samples showed fragments of ulcer material and a fragment of benign gastric mucosa with marked chronic and acute gastritis. No intestinal metaplasia or dysplasia was noted. H. pylori stain was negative. Groups of monomorphic mononuclear cells were visualized in the ulcer samples that were stained positive for CD20 and negative for pankeratin. The pathological findings were consistent with a diagnosis of gastric large B-cell lymphoma.

PET-CT imaging was performed approximately one month later to assess for metastases and staging. No metastases were noted. The known gastric mass was the only location of hypermetabolism (Fig. 2).

Patient was referred to medical oncology for further management.

Table 1 – Abnormal findings on complete blood count.

Measurement	Value	Normal range
RBC count	3.6 (L)	3.90-5.00 M/μL
Hemoglobin	8.7 (L)	12.00-16.00 M/μL
Hematocrit	28.8 (L)	36.0-48.0%
Mean corpuscular hemoglobin concentration	24.2 (L)	27.0-32.0 PG
RBC distribution width	17.4 (H)	11.9-15.5%
Platelet count	536 (H)	150-450 k/μL
WBC count	11.4 (H)	3.5-10.5 k/μL

Table 2 – Abnormal findings on comprehensive metabolic panel.

Measurement	Value	Normal range
Glucose	107 (H)	65-99 mg/dL
BUN	22 (H)	7-17 mg/dL
Na	133 (L)	137-145 mmol/L
K	3.1 (L)	3.5-5.1 mmol/L
Cl	95 (L)	98-109 mmol/L
eGFR	53 (L)	>59 mL/min/1.73 m^2
Albumin/globulin ratio	1.0 (L)	1.1-2.2

Discussion

Gastric large B-cell lymphoma is uncommon, with an incidence of 7/100,000, but the gastrointestinal tract nonetheless represents the most common site of extranodal lymphoma involvement [1–3]. While gastric lymphoma is often associated with H. pylori infection, primary large B-cell gastric lymphoma often presents without H. pylori, as in this case [1]. Furthermore, primary gastric lymphoma as seen in this case is much less common than systemic disease with gastric involvement, and it is more common in men than women [1–3]. Incidence has increased over the past 2 decades, and is continuing to increase [1,3].

Diagnosis of gastric large B cell lymphoma can be challenging, which means that diagnosis is often delayed [4]. The common symptoms of nausea, vomiting, and indigestion mimic many other conditions, such as gastritis or peptic ulcer disease, and the majority of patients do not report gastrointestinal bleeding [1,5,6]. As clinical findings are nonspecific, imaging plays an important role in diagnosis [4]. Gastric wall thickening, atypical ulcer deformities, and masses can all be identified by CT scan, and CT can be further used to evaluate for systemic involvement [3,4]. In this case, the CT showed an ulcerated thickening of the anterior gastric wall, and this wall thickening is indeed found on imaging in 85% of cases [1]. Additionally, the characteristics of such gastric wall thickening can help to differentiate lymphoma from the much more common adenocarcinoma; gastric lymphoma tends to show more widespread and severe gastric wall thickening, whereas that

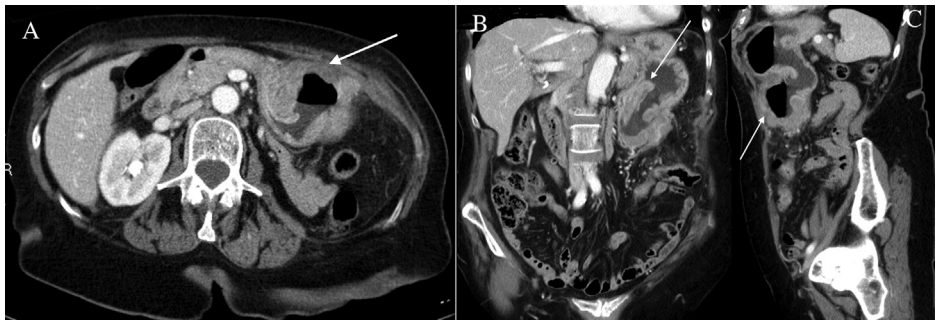

Fig. 1 – Initial contrast-enhanced CT image. (A) Axial view demonstrating diffuse thickening of the wall with a focal hypodense nonenhancing portion reflecting the necrotic mass (white arrow). (B) Coronal view demonstrating diffuse thickening of the wall with a focal hypodense nonenhancing portion reflecting the necrotic mass (white arrow). (C) Sagittal view demonstrating diffuse thickening of the wall with a focal hypodense nonenhancing portion reflecting the necrotic mass (white arrow).

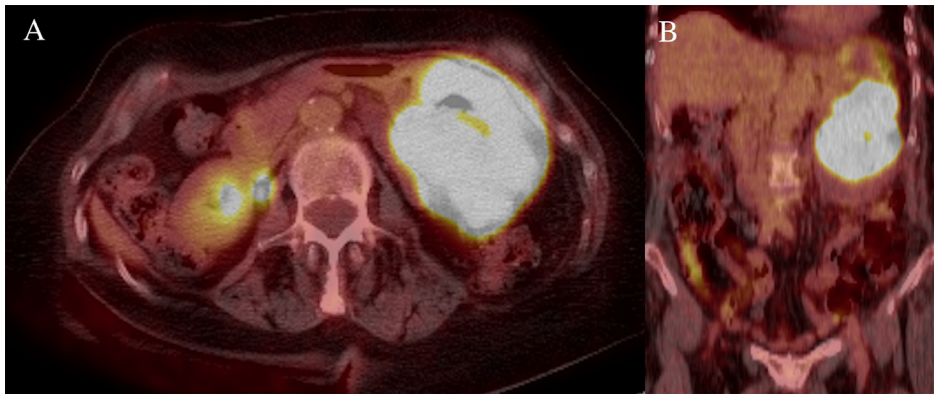

Fig. 2 – PET-CT skull base to mid-thigh. (A) Axial view demonstrating hypermetabolic gastric mass. (B) Coronal view.

seen with adenocarcinoma tends to be focal and less severe [3]. PET-CT is useful for staging in primary gastric large B cell lymphoma [6]. This contrasts with primary MALT gastric lymphoma, in which PET-CT is not recommended, as the indolent course of MALT gastric lymphoma frequently results in PET-CT being read as negative [1].

Esophagogastroduodenoscopy with biopsy remains gold standard for diagnosis [1,6]. While EGD alone is not sufficient for diagnosis, it allows for visualization of lesions and is useful in follow-up [1]. In this case, EGD provided visual confirmation of the lesion on the anterior gastric wall, and immunohistochemistry showed findings consistent with gastric large B-cell lymphoma, without H. pylori infection.

Standard treatment currently consists of either 6 cycles of rituximab, cyclophosphamide, hydroxydaunorubicin hydrochloride, vincristine and prednisone (R-CHOP) or 3 cycles of R-CHOP plus radiotherapy [2]. Surgery is no longer standard treatment and is performed solely in the event of complications such as perforation or obstruction [1,2]. The mortality rate for surgical treatment is nearly 8% [1]. Prognosis varies, with negative prognostic factors including advanced age and male gender [1].

Conclusions

This case involves an interesting presentation: a female patient with gastric large B-cell lymphoma unrelated to H. pylori and with no systemic involvement. Due to nonspecific clinical findings, imaging played a critical role in diagnosis.

Patient consent

Patient consent obtained.

REFERENCES

[1] Juarez-Salcedo LM, Sokol L, Chavez JC, Dalia S. Primary gastric lymphoma, epidemiology, clinical diagnosis, and treatment. Cancer Control. 2018;25:1073274818778256. doi:10.1177/1073274818778256.

[2] Pirzada UA, Kumar K, Tariq H, Niazi M, Makker J. Case of gastric diffuse large B-cell lymphoma. Case Rep Oncol 2019;12:39–46. doi:10.1159/000496332.
[3] Gollub MJ. Imaging of gastrointestinal lymphoma. Radiol Clin North Am 2008;46:287–312. doi:10.1016/j.rcl.2008.03.002.
[4] Lo Re G, Federica V, Midiri F, Picone D, La Tona G, Galia M, et al. Radiological features of gastrointestinal lymphoma. Gastroenterol Res Pract 2016;2016:2498143. doi:10.1155/2016/2498143.
[5] Bai Z, Zhou Y. A systematic review of primary gastric diffuse large B-cell lymphoma: clinical diagnosis, staging, treatment and prognostic factors. Leuk Res 2021;111:106716. doi:10.1016/j.leukres.2021.106716.
[6] Chang ST, Menias CO. Imaging of primary gastrointestinal lymphoma. Semin Ultrasound CT MR 2013;34:558–65. doi:10.1053/j.sult.2013.05.008.