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Complications from an unknown gastric diffuse large B-cell lymphoma: A case report

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ABSTRACT

Introduction: Non-epithelial gastric primary tumors are non-common pathological entities, known for its indolent clinical course and excellent survival compared with other kinds of malignant tumor. Obstruction, perforation, or bleeding are complications we rarely observed but thy can be the first presentation of these disease. The treatment strategy is still controversial and in a few cases surgery has a determinant role.

Case Report: An 80-year-old man, with background of portal hypertension, came to emergency department with symptoms and signs of upper gastrointestinal (GI) perforation. Gastric resection was performed. The patient recovered well and was preparing for oncological therapy.

Conclusion: In this report we evidence particular clinical features and challenges in diagnosis and treatment strategies of primary gastric lymphomas, according with literature review.

Keywords: Gastric tumors, Lymphoma, MALT, Non-Hodgkin

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INTRODUCTION

Mucosa-associated lymphoid tissues (MALTs) are characterized by an indolent clinical course and excellent survival compared with the other malignant tumor [1]. The clinical features of gastric MALT lymphoma are non-specific. It usually manifests as abdominal pain, vomiting, weight loss, etc., which can also be observed in gastric ulcer and any other tumor. Rarely we can observe complications (obstruction, perforation, or bleeding) like first appear once. Herein, we report a case of gastric diffuse large B-cell lymphoma, which presented itself with gastric perforation.

CASE REPORT

In January 2020, an 80-year-old man recurred to the Emergency Department with symptoms of upper gastrointestinal perforation. His background included left colon carcinoma (surgically removed 12 years ago and then treated with chemotherapy), Gilbert' syndrome, portal hypertension with known splenomegaly, thrombocytopenia, esophageal varices (treated with multiple endoscopic procedures) and mesenteric thrombosis (in treatment with anticoagulant).

Routine biochemistry shows a slight increase of leucocytes and C-reactive protein. Computed tomography (CT) scan revealed pneumoperitoneum with liquid layer in abdominal upper quadrants and a stomach with thickened walls (Figure 1).

In suspicion of perforated peptic ulcer, the patient underwent emergent explorative laparoscopy: the surgeons found a purulent peritonitis in the upper quadrants and, on the anterior wall of the stomach, a circular area, greater than 2.5 cm, with thickened walls, surmounted by a ulcerative crater with irregular and friable margins. Because of the failure of multiple attempts of laparoscopic suture, the surgeons decided

for midline laparotomy: also in this case the direct suture was not sure, then they chose to partial gastrectomy and reconstruction with transmesocolic Roux-en-Y loop, wrapping mechanical T-L gastro-digiunal anastomosis and L-L jejunal-jejunal anastomosis (Figure 2).

At the end of the procedure, the patient was transferred to Intensive Care Unit. He received endovenous parenteral nutrition for eight days after the operation and was sent back to common ward on the sixth day. In fifth day he was on a liquid diet and in sixth one a diet for gastrectomized patients was introduced.

The tumor was located in the anterior wall of the stomach body toward the greater curvature (Figure 2). Histopathologic examination of the specimen revealed a diffuse growth pattern of large lymphocytes with an irregular nuclear profile, a high nuclear-cytoplasm ratio and evident immunophenotype B-nucleoli.

Immunohistochemical analysis revealed positivity for CD20, CD10, and Bcl6, whereas negative markers were MUM1/IRF4, Bcl2, CD30, cyclinD1, HHV8, and EBV-RNA (EBER).

Following negativity for c-MYC rearrangement (tested with FISH assay) the diagnosis was that of High grade mature B-cell lymphoma, compatible with "diffuse large B-cell lymphoma" (DLBCL) (Figures 3 and 4).

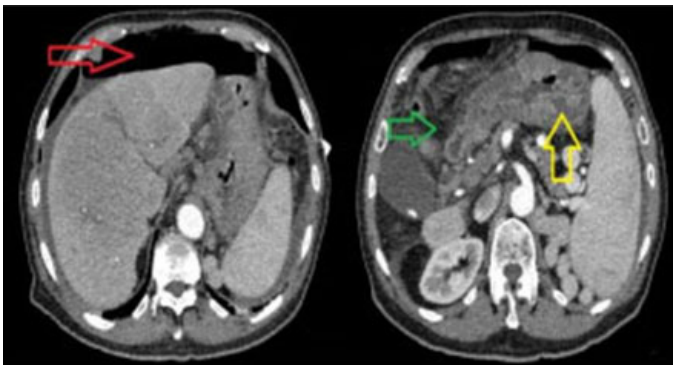

Figure 1: Abdomen CT scan in suspicion of peptic perforation revealed pneumoperitoneum (red arrow), periepathic and perigastric liquid layer (green arrow) and above all a stomach with thickened anterior wall (yellow arrow).

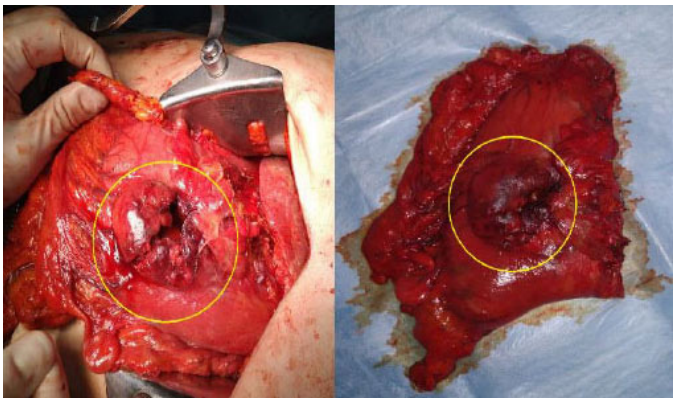

Figure 2: After many failed attempt of laparoscopic suture, the surgeons decided to laparotomy: the stomach present on the wall of the greater curvature an ulcerative crater with friable margins.

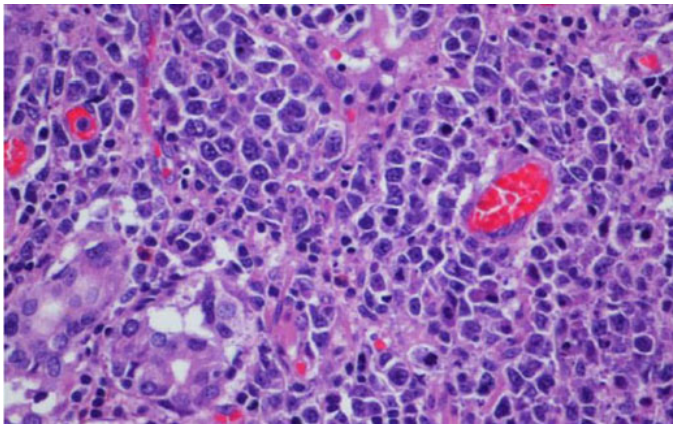

Figure 3: A high-power field showing neoplastic lymphocytes with large, irregular nuclei, mitoses and gland destruction.

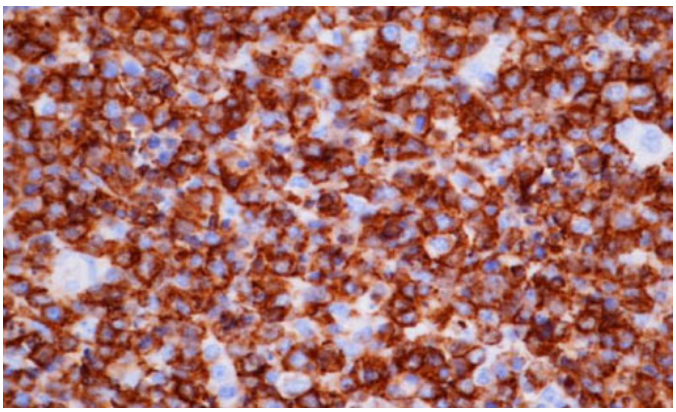

Figure 4: Positive immunostaining for CD20 demonstrates B-cell lineage of neoplastic lymphocytes.

In light of the above, during the hospitalization the patient was evaluated by a hematologist: the specialist suggested the patient underwent chest CT-scan, positron emission tomography (PET)-whole body with F18-FDG, echocardiogram, and bone marrow biopsy, all negatives for systemic disease.

The patient had a good postoperative recovery and there was no complications; he was successfully discharged in 23rd day. He is regularly followed up at a postoperative clinic and is doing well; the multidisciplinary group proposed him 6 cycles of chemotherapy with R-MINI-COMP.

DISCUSSION

The GI tract is the predominant site of extranodal non-Hodgkin lymphomas (NHLs). Primary NHLs of the GI tract are rare, accounting for 1–4% of malignancies arising in the stomach, small intestine or colon. In contrast, secondary GI involvement is relatively common (10% of patients with limited stage NHL at the time of diagnosis, and >60% of those dying from advanced NHL): the following sites of involvement include

stomach (68–75%), small bowel (including duodenum: 9%), ileo-cecal region (7%), rectum (2%), diffuse colonic involvement (1%), more than one GI site (6–13%) [2–5].

Primary gastric lymphoma (PGL) accounts for 3% of gastric neoplasms and 10% of lymphomas [6].

It mainly strikes adults (with a median age of 66 years at diagnosis) in all races, equally among men and women (gender disparities are seen by site); the exact incidence is unknown because most epidemiologic data come from developed countries [7].

The frequent histological subtypes of PGL (greater than 90%) are [8–11]:

- Marginal zone B-cell lymphoma of the mucosa-associated lymphoid tissue (MALT), that are low-grade lesions. It arises from post-germinal center memory B-cells with the capacity to differentiate into marginal zone cells and plasma cells. It can result from several epithelial tissues (the stomach above all): while it has a tendency to remain localized to the tissue of origin for long periods of time, it frequently recurs locally and has potential for systematic spread and transformation to an aggressive B-cell lymphoma.
  It is known that the association of MALT gastric lymphoma with chronic *Helicobacter pylori* infection (75% of *H. pylori*-positive gastric MALT lymphomas obtain complete remission after antibiotic therapy); in *H. pylori*-negative gastric MALT lymphomas, recurrent chromosomal translocations were found, like t(11;18), t(14;18) and t(1;14), or t(3;14) (p13;q32).
- Diffuse large B-cell lymphoma (DLBCL) is high grade and more common than the first one.

Diffuse large B-cell lymphoma can arise de novo in the stomach or whether it transforms from low-grade MALT lymphomas [12, 13]. Diffuse large B-cell lymphoma is cytogenetically, biologically and clinically different tumors; it's often called "high grade lymphoma" because:

- It is more aggressive clinically with rapid growth.
- It has large clusters or sheets of large B-cells (centroblast- or immunoblast-like cells) in mucosa associated lymphoid tissue, and it means a worse prognosis [14].
- Neither trisomy 3 or t(11;18)(q21;q21) is common in primary large cell lymphomas of the gastrointestinal tract [15, 16].

Diffuse large B-cell lymphoma must be distinguished from other B-cell neoplasms that may involve extranodal sites, like nodal and splenic marginal zone lymphoma or MALT lymphomas; sometimes they take a plasmacytic differentiation, then they go to differential diagnoses with other type of NHLs, such as lymphoplasmacytic lymphoma, follicular lymphoma, monocytoid B-cell lymphoma, and extraosseous plasmacytoma [17].

Diagnosis

Patients typically present with non-specific symptoms, seen in other common gastric diseases, such as peptic ulcer disease or adenocarcinoma. The most common presenting symptoms include epigastric pain or discomfort (78–93%), anorexia (47%), weight loss (frequently due to local compromise of GI structures: 25%), nausea and/or vomiting (18%), occult gastrointestinal bleeding (19%), early satiety [18–21].

Systemic B symptoms (fever, night sweats) are seen in 12% of patients; hematemesis and melena are uncommon. The duration of symptoms preceding the diagnosis is quite variable, ranging from a few days to six years.

The physical examination is often normal, but may reveal a palpable mass and/or peripheral lymphadenopathy when the disease is advanced. Laboratory studies also tend to be normal at presentation; anemia or an elevated erythrocyte sedimentation rate may be present in a few cases [19–21].

Radiology is also vague in diagnosing PGLs, showing a polypoid lesion or homogeneous concentric gastric wall thickening in CT scan, generally without a single interpretation. Magnetic resonance imaging (MRI) can help to define size and location of the lesion and its relationships with surrounding organizations [22]; PET-CT can find out the position of hypermetabolism, which can identify probability of malignancy.

The diagnosis of gastric lymphoma is usually established during upper endoscopy with biopsy. The endoscopic appearance of gastric PGL varies (mucosal erythema, a mass or polypoid lesion with or without ulceration, benign-appearing gastric ulcer, nodularity, thickened cerebroid gastric folds), than only biopsy have practical significances of diagnosis [23, 24].

An endoscopic ultrasound should determine the depth of invasion and the presence of perigastric nodes. The pattern seen on endoscopic ultrasound (EUS) may correlate with the type of lymphoma that is present: mass-forming lesions were typical of diffuse large B-cell lymphoma [24]. Endoscopic ultrasound alone has suboptimal accuracy in distinguishing benign from malignant lymph nodes. When combined with endoscopic biopsy, however, overall accuracy approaches 90% (versus 66% for EUS alone). Even higher accuracy rates may be achievable if flow cytometry is performed. Thus, caution is warranted in the interpretation of findings using EUS or CT alone [24–28].

Laparotomy and laparoscopy are typically reserved for patients with complications such as obstruction or perforation, like the case herein reported.

Treatment

As a matter of fact, surgery is restricted to the treatment of complications such as bleeding, perforation or obstruction due to the tumor, and today it is not the first treatment, with its mortality rate reaching up to

8% [29]. Chemotherapy has surpassed surgery in terms of benefits and complications, and R-CHOP has been traditionally used as the frontline treatment in patients with localized gastric DLBCL [30]. The PET-CT should be done at the end of therapy, and if the patient has progressive disease, the consideration for second-line treatment (salvage chemotherapy) for DLBCL with a regimen, such as rituximab, ifosfamide, carboplatin, and etoposide or Gemcitabine, dexamethasone, and cisplatin and rituximab, followed by autologous stem cell transplantation should be considered [31].

CONCLUSION

Our case report evidences particular clinical features, challenge in diagnosis, and treatment strategies of primary gastric lymphomas. According to literature review, these diseases require specified medical management. Surgery is a therapeutic option in emergency setting when patients have had a complication.

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Author Contributions

William Sergi – Conception of the work, Design of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

S Ricci – Acquisition of data, Analysis of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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S Bonilauri – Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

G Frazzetta – Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.