Case report

An unusual presentation of gastric mucosa-associated lymphoid tissue (MALT) lymphoma following blunt abdominal trauma

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SUMMARY

A 79-year-old woman presented to the emergency department following a motor vehicle collision. As part of her workup she underwent a CT scan which identified a large mass containing calcifications centred around the gastric antrum, and while being assessed she produced 500 mL of haematemesis. An endoscopy revealed an area of friable mucosa the nature of which was uncertain, and multiple biopsies revealed amyloid deposition and active *Helicobacter pylori* gastritis. Following review of imaging and pathology, a diagnosis of gastric mucosa-associated lymphoid tissue (MALT) lymphoma was established. She was treated with quadruple therapy for the *H. pylori* and at 6-month follow-up she is asymptomatic with repeat endoscopy revealing healing of the ulceration and no biopsy evidence of *H. pylori* or MALT.

BACKGROUND

Primary gastric lymphomas (PGL) while an uncommon gastric primary malignancy accounting for 3%–5% of stomach malignant tumours,¹ represents ~40% of all extranodal lymphomas.² PGL is categorised into two histological subtypes namely diffuse large B-cell lymphoma and mucosa-associated lymphoid tissue (MALT) lymphoma.³ MALT lymphomas may occur throughout the body with 50% located in the gastrointestinal tract of which 85% are gastric in origin.⁴ Presentation is varied and may include epigastric pain, nausea, vomiting, dyspepsia, weight loss, chronic manifestations of gastric bleeding with anaemia or even typical B-cell lymphoma symptoms such as fever or night sweats can be present.³ We report a unique presentation of an uncommon condition and highlight the importance of multidisciplinary discussion in the management of neoplastic disease.

CASE PRESENTATION

A 79-year-old woman presented to the emergency unit of the nearby level 2 trauma centre following a motor vehicle collision. She had experienced a head on collision after a car crossed carriageways into her lane at around 40 mph. Her air bag had deployed and there was no reported loss of consciousness. Her only reported pain was in her right ankle. On examination, she had a mild tachycardia of 92 beats/min with a stable blood pressure of 180/74 mm Hg. Examination of the abdomen revealed mild upper abdominal tenderness but no peritonism and no

ecchymoses. A CT scan performed as part of the trauma workup revealed a large mass containing calcifications centred around the gastric antrum, with an initial diagnosis of gastrointestinal stromal tumour (GIST) being proposed. While in the department she experienced a 500 mL fresh blood haematemesis presumably caused by the blunt abdominal trauma, causing the tumour to bleed. Her haemoglobin at initial presentation was 131 g/L and dropped to 85 g/L. She did not receive a transfusion of blood products. There were no sources of external bleeding and no internal bleeding identified on the whole-body CT scan. On further detailed questioning, she denied any history of dyspepsia, weight loss, haematemesis, abdominal pain, anorexia, nausea or vomiting. Imaging also revealed a Lisfranc fracture of the right ankle and this was treated by means of closed reduction and splinting. The patient was commenced on an intravenous proton-pump inhibitor and underwent an upper endoscopy which identified a friable gastric mucosa with no active bleeding. Multiple superficial biopsies were non-diagnostic.

The patient was then transferred to our institution for further evaluation and consideration of gastrectomy for the suspected GIST.

INVESTIGATIONS

Review of imaging at our institution suggested that the lesion was not in keeping with a GIST and a multidisciplinary team (MDT) discussion recommended further evaluation and acquisition of tissue by a deep biopsy.

A repeat endoscopy was performed, and a nodular ulcer was identified on the anterior wall of the gastric body (figure 1A and B). Radial endoscopic ultrasound (EUS) revealed a heterogeneous lesion arising from the muscularis propria (figure 1C) and a tissue biopsy was acquired under linear EUS guidance (figure 1D). Histological sections from the gastric biopsy showed effacement of the mucosa by a dense lymphocytic infiltrate replacing the lamina propria (figure 2A) and CD20 immunostaining identified lymphocytes as B-cells (figure 2B). On higher magnification, lymphoepithelial lesions were readily identified (figure 2C). In the lumen, numerous *Helicobacter pylori* organisms could be seen (figure 2D). In some areas, amorphous, eosinophilic material could be seen

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Figure 1 (A, B) Endoscopic views of localised nodularity in the gastric body. (C) Radial endoscopic ultrasound (EUS) image illustrating heterogeneous lesion arising within the muscularis propria (white arrow). (D) Linear EUS demonstrating a biopsy of the lesion being performed.

deposited within the lamina propria, consistent with associated amyloid deposition.

The pathology was reviewed in context of the radiological imaging and the features were felt to be in keeping with a gastric MALT lymphoma.

Her haemoglobin and haematocrit remained stable throughout her hospitalisation.

DIFFERENTIAL DIAGNOSIS

The main differential diagnoses for a gastric mass are gastric cancer and GIST. In this case, up until the index presentation the patient did not report any gastrointestinal symptoms and the initial imaging was not in keeping with a gastric carcinoma. The initial read of the CT scan suggested a GIST but further review by an expert team of gastrointestinal radiologists in the setting of an MDT indicated that this was atypical of a GIST. This emphasises the importance of an MDT approach for all patients with as neoplastic lesion as excluding malignancy is as important as confirming one.

Figure 2 (A) Effacement of the mucosa by a dense lymphocytic infiltrate replacing the lamina propria. (B) CD20 immunostaining demonstrating that the lymphocytes are B-cells. (C) Lymphoepithelial lesions are readily identified on a higher magnification view. (D) Numerous *Helicobacter pylori* organisms can be seen within the gastric lumen.

TREATMENT

The patient underwent treatment with quadruple therapy against *H. pylori* consisting of omeprazole, bismuth subcitrate, metronidazole and tetracycline. Discussion with oncologists at the MDT confirmed that no additional therapy was indicated and that a further endoscopy should be performed to evaluate the efficacy of treatment.

OUTCOME AND FOLLOW-UP

At 6-month follow-up, the patient remained asymptomatic. A repeat endoscopy revealed complete healing of the ulcer and repeat biopsies showed no evidence of *H. pylori* nor MALT lymphoma.

DISCUSSION

MALT lymphomas were first characterised by pathologists Peter Isaacson and Dennis Wright in 1983.⁵ MALT lymphomas are considered low-grade malignancies; however, they can transform into high-grade lymphomas.³ They typically occur between the ages of 50 and 60 years and half of all MALT lymphomas occur in the gastrointestinal tract of which 85% are located in the stomach.^{3,4}

The aetiology of MALT lymphoma has been linked to *H. pylori* gastritis in which *H. pylori* cytotoxin-associated gene A protein plays an important role.⁶ Autoantigens as well as *H. pylori* specific T-cells result in antigenic stimulation with subsequent proliferation and neoplastic transformation of B-cells following acquisition of genetic defects, the most common being trisomies of chromosomes 3 and 18 and deletions at 6q23. The accumulation of such genetic abnormalities as a result of the chronic inflammation caused by *H. pylori* gastritis results in loss of dependency from the antigenic stimulation, and progression to the point where the lymphoproliferative process becomes frankly malignant.⁶

The clinical presentation of MALT lymphomas is heterogeneous with some patients reporting gastrointestinal symptoms such as epigastric pain, nausea, vomiting, dyspepsia and weight loss while others report symptoms typical of B-cell lymphoma including fever or night sweats.³ The former gastrointestinal-symptoms are non-specific and thus often lead to a delay in diagnosis.⁴ The presence of anaemia due to chronic GI blood loss is not an infrequent finding; however, acute blood loss with haematemesis has not previously been reported in the literature. In the current case, compression of the upper abdomen by blunt abdominal trauma likely precipitated the haematemesis as the patient's haematological profile did not suggest a chronic anaemia may have in part been long-standing. Either way the motor vehicle accident precipitated the presentation and eventual diagnosis.

The establishment of a diagnosis of MALT is usually made at endoscopy and the appearance of the gastric mucosa may include irregularly shaped superficial erosions, shallow ulcers, enlarged rugal folds, intragastric nodularity or thickened gastric walls.^{3,7} However, in many cases, including the present, the mucosal appearance may not be diagnostic. Biopsy is considered to be the 'gold standard'; however, diagnosis may be missed by conventional pinch biopsies as the mucosa may be normal with only underlying submucosal infiltration. Thus, it is essential to perform core biopsies when the diagnosis is being considered.^{3,8}

The typical histological appearance is of lymphocytes of variable sizes with nuclei that are irregular in shape, resembling those of follicle-centre centrocytes, and moderately abundant cytoplasm.⁹ Their morphological pattern varies greatly; from

resemblance to centrocytes or monocystoid cells or even small lymphocytes. Any of these patterns can predominate or they can coexist to various degrees in the same case. Scattered transformed blasts can also be found.⁹ Regarding the amyloid deposit found in our biopsy, this is considered a rare and organ confined complication of MALT lymphoma with a low risk for systemic progression.¹⁰

The National Comprehensive Cancer Network guidelines state that in early stages of the disease, the first line of treatment is a currently accepted *H. pylori* eradication therapy.¹¹ For this purpose, the American College of Gastroenterology guidelines on *H. pylori* treatment recommend a proton-pump inhibitor along with two to three antibiotics given either sequentially or concomitantly for a period of 7–14 days.¹² If residual disease is detected at follow-up or the patient is symptomatic then involved site radiation therapy or rituximab therapy is recommended. Advanced stage disease at presentation is treated using chemotherapy, immunotherapy or a combination of both.

Learning points

- Mucosa-associated lymphoid tissue (MALT) lymphoma is a histological subtype of primary gastric lymphoma that may occur anywhere throughout the body, with 50% occurring in the gastrointestinal and 85% of which are of gastric origin.
- The aetiology of MALT lymphoma has been linked to *Helicobacter pylori* gastritis.
- The gold standard for diagnosis of suspected cases is core biopsy, as conventional mucosal biopsy may be normal.
- The first line of treatment is *H. pylori* eradication therapy.

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