Gastric liposarcoma treated successfully with partial gastrectomy

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ABSTRACT

Introduction: Liposarcoma is a malignant tumor of immature fat cells or lipoblasts most commonly occurring in the extremities or retroperitoneum, but rarely found on or within visceral organs. Case Report: We report a case of a symptomatic gastric liposarcoma successfully diagnosed pre-operatively by imaging and immunohistochemistry ultimately treated with a partial gastrectomy. Conclusion: This case highlights the importance of pre-operative tissue diagnosis, adequate resection, and a multi-disciplinary approach towards infrequently encountered tumors. Based on this experience and a review of available case reports and series, we offer safe and reasonable recommendations for the work-up and treatment of gastric liposarcomas.

Keywords: Gastrectomy, Liposarcoma, Molecular markers, Stomach

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INTRODUCTION

Liposarcoma is a malignant tumor of immature fat cells or lipoblasts most commonly occurring in the extremities or retroperitoneum, but rarely found on or within visceral organs. Because the differential for primary gastrointestinal tumors is broad, a combination of cross-sectional imaging and tissue analysis is often required prior to definitive treatment. Molecular markers are a useful adjunct when radiology is non-diagnostic or tissue acquisition is technically challenging. A literature review identified only 15 reported cases of a liposarcoma originating from the stomach. We review all three diagnostic modalities for these rare tumors.

CASE REPORT

The patient is a 79-year-old male who presented to the emergency department for intermittent right upper quadrant abdominal pain with reported hematemesis and melena. His abdomen was soft and no masses were palpated. Serology was notable for a hemoglobin of 7.8 g/dl and hematocrit of 26.6%. The patient was admitted to the Internal Medicine service with the diagnosis of upper gastrointestinal bleed. Computed tomography
(CT) examination with IV and PO contrast demonstrated a large mixed fat and soft tissue density intraluminal gastric mass (7.9x5.6x7.2 cm) originating from the greater curve consistent with a well-differentiated liposarcoma (Figure 1). No extraluminal extension was evident and no lymphadenopathy or metastases were present.

Subsequent endoscopy identified a large, partially obstructing submucosal gastric mass located posteriorly along the greater curvature near the fundus (Figure 2). Initial biopsy attempts were unsuccessful and non-diagnostic. Repeat biopsy was concordant with radiological findings and revealed a well-differentiated fatty neoplasm with MDM2 amplification on tissue section.

The patient was appropriately counseled and underwent an exploratory laparotomy. The pancreas and adjacent structures had no tumor involvement. The mass was localized to the greater curvature, with sufficient sparing of the gastric cardia and fundus to perform a sub-total gastrectomy and Roux-en-Y gastrojejunostomy reconstruction.

Final histopathological examination of the resection specimen revealed a 7.5 cm well-differentiated adipocytic neoplasm that did not extend to the surgical margins. The neoplasm had mature adipose tissue with variably-sized adipocytes, scattered nuclear atypia, bands of fibrous septa, and foci of chronic lymphohistiocytic inflammation (Figure 3). Necrosis was not present and there was less than one mitotic figure per ten high powered fields examined. Biopsy material showed MDM2 amplification within the neoplasm. The overall findings were consistent with a well-differentiated liposarcoma, histologic grade 1.

The patient's post-operative course was uneventful and he was discharged five days later in stable condition. The patient did not undergo any adjuvant treatment. At the time of this report, the patient had a six month surveillance CT scan and upper GI endoscopy without evidence of recurrence. He was doing well clinically and was disease-free after one year of follow-up.

**DISCUSSION**

Gastric liposarcoma was first described by Abrams and Tuberville in 1941 [1]. These tumors are rare, comprising only 1–3% of all gastric malignancies [2]. Sarcomas are typically diagnosed in extremities or the retroperitoneum; they rarely originate from visceral organs. Intra-abdominal sarcomas account for only 2% of all sarcomas [3] and there are 15 case reports published and available on gastric liposarcomas [4]. Mortality and overall prognosis depends largely on histological staging and location of the tumor. Tumors arising from visceral organs tend to carry a higher mortality rate compared to isolated extremity tumors [5]. Local recurrence can be as high as 60–100% at five years [6, 7]. Distant metastasis depends largely on the grade of the sarcoma.

Patients are typically asymptomatic until intraluminal growth causes mass effect and eventually ulceration and hemorrhage. Symptoms range from vague abdominal pain, dyspepsia, and early satiety to profound hematemesis [8, 9]. The stomach can accommodate a large amount of growth and diagnosis is often delayed until the tumors are quite large.

Several factors influence the diagnostic value of esophagogastroduodenoscopy (EGD) with biopsy. Tumor location, extra-luminal growth, and degree of

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**Figure 1:** (A) Contrast-enhanced CT axial and (B) Coronal reformation images. Encapsulated intraluminal gastric mass arising from the greater curvature, 7.9x5.6x7.2 cm, with macroscopic fat and multiple thick internal septa, characteristic of a well-differentiated liposarcoma.

**Figure 2:** Submucosal gastric mass on upper endoscopy.

**Figure 3:** (A) Mature adipose tissue with variably sized adipocytes and thin fibrous septa (4x view) (B) Nuclear atypia view at 40x.
Pleomorphic liposarcomas typically have no fatty components within its predominantly cystic-appearing myxoid matrix in the extremities and may or may not have areas of fat increase in non-fatty tissue components [7].

For those lesions followed by serial CT and/or MR imaging, dedifferentiation of a well-differentiated liposarcoma may dedifferentiate into other sarcomatous components on CT or MR imaging and, as such, they have no specific imaging features that allow differentiation from other sarcomas [15].

Partial or total gastrectomy with adequate margins is the standard of care for these patients [16, 17]. The extent of dissection depends on the ability to achieve wide margins of healthy tissue for an R0 resection [10]. Even for well-differentiated sarcomas that have lower local recurrence rates, five year disease-free survival is worse in the setting of microscopically-positive margins [6]. Frozen sections have been used successfully to ensure disease-free margins [5]. Several surgeons from Japan describe their experience performing laparoscopic intragastric surgery for a 5 cm tumor in the gastric fundus, however their margins were positive and the patient eventually required a total gastrectomy [6]. Intragastric surgery is best suited for well-encapsulated, submucosal lesions in close proximity to the gastro-esophageal junction. Laparoscopic and endoscopic cooperative surgery (LECS) is a hybrid minimally invasive approach that has also been described [16] although indications for use over traditional operative techniques remain unclear. Enucleation is not appropriate when there is a high clinical suspicion for malignancy [18]. Currently there is no supportive evidence for or against post-operative chemotherapy or radiation [5].

CONCLUSION

The bulk of clinically relevant information is from decades of case reports on the subject. Based on the reviewed literature and our own experience, we offer the following guidance: 1. Accurate diagnosis depends largely on CT or MR imaging and histochemical markers. Every effort should be made to provide an adequate tissue sample whenever possible. 2. Operative resection remains the mainstay of treatment, however the particular approach should be tailored based on patient physiology and the ability to obtain negative margins. 3. Although post-operative chemotherapy and radiation have been described, they are not standardized and each case should be presented at a multi-disciplinary conference for expert discussion.

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Author Contributions

Barret Halgas – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting 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.

Jennifer Viera – Conception of the work, Acquisition of data, Analysis of data, Drafting 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.

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Authors declare no conflict of interest.

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

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REFERENCES


