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Case Report

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Lower Extremity Varicose Veins: An Unusual Presentation of Small Bowel Leiomyosarcoma

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Keywords
Leiomyosarcoma · Small intestine · Gastrointestinal stromal tumor · Stromal tumors

Abstract
Leiomyosarcomas (LMSs) are extremely rare and comprise only 1.2% of small bowel malignancies. Advancements in immunohistochemical techniques have allowed for the differentiation between LMSs and gastrointestinal stromal tumors. LMSs remain difficult to detect via endoscopy and require a more intricate diagnostic approach. The staging and sizing of these tumors are important prognostic indicators. We report a case of a 67-year-old male who presented with bulging lower extremity veins, abdominal bloating, and weight loss. A CT of the abdomen and pelvis revealed a pelvic mass arising from the small bowel and a metastatic hepatic lesion, which was found to be compressing the inferior vena cava. A biopsy of the hepatic lesion confirmed the diagnosis of metastatic LMS.

Introduction

Malignant tumors arising from the small bowel are relatively rare and constitute about 5% of all gastrointestinal (GI) malignancies [1]. Sarcomas are the 5th most common malignant tumor arising from the small bowel. They comprise 1.2% of small bowel malignancies, with leiomyosarcoma (LMS) being the most common subtype [2]. Since the introduction of immunohistochemical techniques in tissue identification, there have only been 26 cases reported of small bowel LMS [3], which denotes how uncommon these tumors are. Histologically, LMSs arise from the muscularis propria and the muscularis mucosa of the bowel wall. The most common regions involved are the jejunum, ileum, and duodenum [4]. LMS is most seen in the 6th decade of life, with preference to the male gender [5]. Due to subtle symptoms, if any, and rarity of the disease, LMS usually presents at advanced stages and often with poor prognosis [6]. In this report, we present a case of a 67-year-old male presenting with bulging lower extremity veins, secondary to metastatic LMS.

Case Presentation

A 67-year-old African-American male presented to the outpatient clinic with distended bilateral lower extremity veins and abdominal bloating of 2 months duration. The patient reported that his symptoms had worsened with progression and were associated with an unintentional weight loss of 10 kg and intermittent constipation. He denied nausea, vomiting, abdominal pain, melena, or hematochezia. His past medical history was remarkable for an untreated hepatitis C infection. He denied prior abdominal surgeries and any family history of cancer. The patient's social history was significant for a 30-pack-year smoking history, with cessation 10 years prior to presentation. He denied any recreational drug use.

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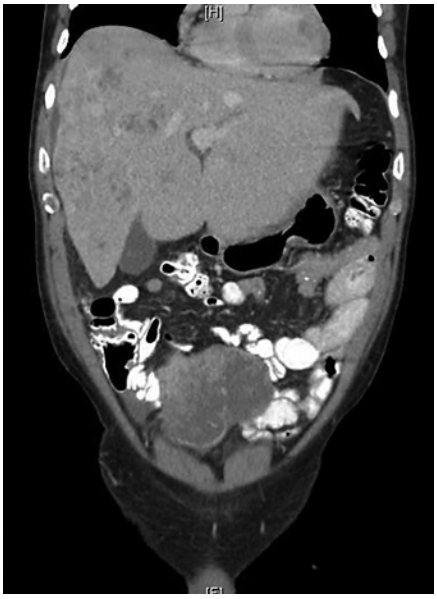

Fig. 1. Coronal CT post-contrast images showing a 12-cm heterogenous and lobulated pelvic mass, arising from the small bowel. Several hepatic masses, with a 4-cm lesion projecting from the dome of the liver and compressing the inferior vena cava.

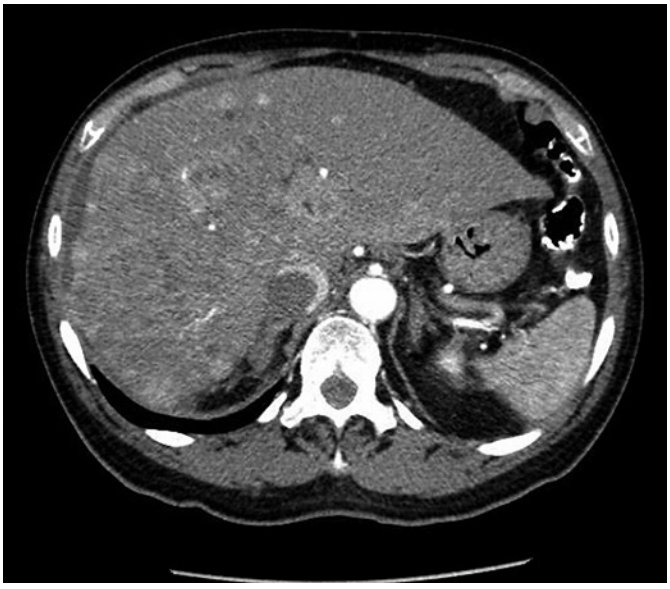

Fig. 2. Axial CT post-contrast images showing a 12-cm heterogenous and lobulated pelvic mass, arising from the small bowel. Several hepatic masses, with a 4-cm lesion projecting from the dome of the liver and compressing the inferior vena cava.

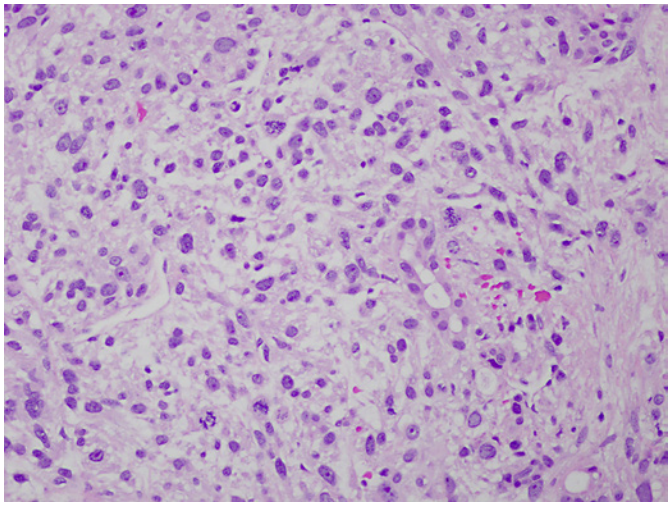

Fig. 3. Mitotically active spindle-shaped cells with moderate atypia and abundant eosinophilic cytoplasm.

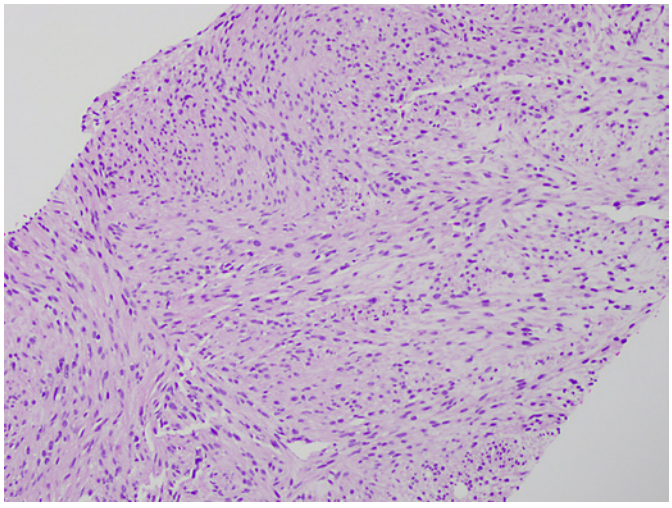

Fig. 4. Mitotically active spindle-shaped cells with moderate atypia and abundant eosinophilic cytoplasm.

Physical examination was pertinent for scattered lower extremity varicose veins, visible up to the mid-thighs, and hepatomegaly, with the liver edge palpated 2–3 cm below the right costal margin. Further examination did not reveal jaundice or scleral icterus.

Laboratory workup was significant for an alkaline phosphatase of 349 IU/L, alanine transaminase of 89 IU/L, and aspartate transaminase of 84 IU/L. Tumor markers, including alpha-fetoprotein, CA 19-9, and carcinoembryonic antigen, were negative.

Initial radiographical evaluation with an abdominal ultrasound was significant for multiple hypoechoic lesions of the liver, suspicious for metastatic disease. Further evaluation with an abdominal and pelvic CT (shown in Fig. 1, 2) with intravenous contrast revealed a 12-cm heterogeneous and lobulated mass in the pelvis, arising from the small bowel. It also showed several hepatic masses, with one 4-cm lesion compressing the inferior vena cava. A hypodensity in the inferior vena cava was seen, consistent with thrombosis.

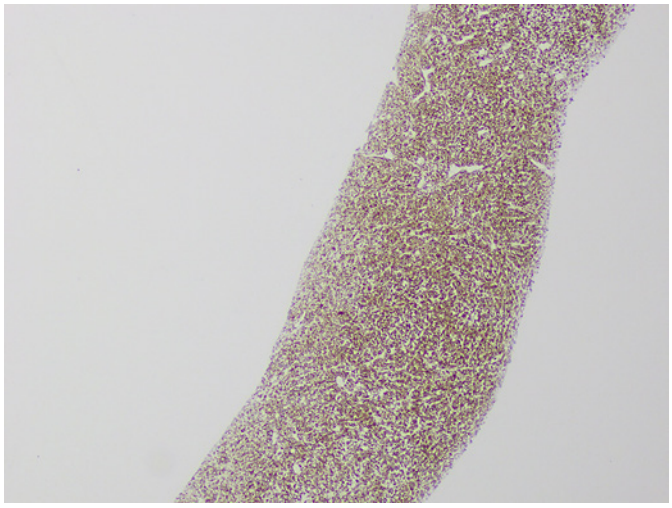

Fig. 5. Immunohistochemical staining positive for desmin.

A transcutaneous biopsy of one of the liver lesions was performed. Histopathological analysis of the specimen showed mitotically active spindle-shaped cells with moderate atypia and abundant eosinophilic cytoplasm (shown in Fig. 3, 4). Immunohistochemical staining was positive for desmin (shown in Fig. 5) and smooth muscle actin, but negative for c-KIT, DOG1, hepatocyte marker, and keratin AE1.

The diagnosis of stage IV LMS of the small bowel was made. Further workup revealed metastases to the lungs and liver. Due to the advanced stage of disease and poor prognosis, the patient decided to pursue comfort care. He ultimately passed away within 2 months.

Discussion

LMSs are an extremely rare type of small bowel malignant neoplasm and possess a diverse nature of presentation. The diagnosis of LMS is often delayed as the tumor itself seldom causes symptoms. These tumors tend to display an extraluminal growth pattern and do not cause obstructive symptoms until the tumor is large. The presentation is often associated with a constellation of symptoms occurring secondary to metastatic disease, such as jaundice, cough, and dyspnea [7]. Nonspecific symptoms, such as bloating, weight loss, and decreased appetite may also present. Metastatic disease predominantly occurs via hematogenous spread, specifically, to the liver (65%), downstream GI tract (15%), and lungs (4%). Hepatic metastasis specifically, may compress the IVC, resulting in varicose veins. However, metastasis from various tumors can cause this. Lymphatic (13%) and peritoneal (18%) spread can also occur [8]. Several imaging modalities, including CT scans, MR enterography, and MR enterocolysis have been studied and proven useful [9]. However, imaging alone is unreliable as it is difficult to radiographically distinguish LMSs from other benign and malignant intra-abdominal tumors. Colonoscopy and esophagogastroduodenoscopy have low detection rates for LMSs as these tumors are usually extraluminal.

Table 1. Differentiating LMS and GIST based on biochemical markers

Biochemical marker	LMS	GI stromal tumors
Desmin	Positive	Positive in <5%
Smooth muscle actin	Positive	Positive in ~25%
CD117 (KIT)	Negative	Positive in ~85%
CD34	Negative	Positive in ~65%
DOG1	Negative	Positive ~90%

GI, gastrointestinal; LMS, leiomyoscarcoma.

In fact, prior to biochemical identification, many gastrointestinal stromal tumors (GISTs) were misdiagnosed as LMSs. After the emergence of immunohistochemical staining, many of the previously diagnosed LMSs proved to be GISTs [10]. This demonstrated LMSs to be even rarer than initially thought. Due to the morphological similarities between LMSs and GISTs, differentiation on a biochemical level is required (shown in Table 1). Desmin and smooth muscle actin are positive in LMSs and are seen in <5% and ~25% of GISTs, respectively [11]. In addition, CD117 (c-KIT) and CD34 are positive in ~85% and ~65% of GISTs, respectively, but are negative in LMSs [11]. If GISTs are found to be c-KIT and CD34 negative, a membrane channel protein, DOG1, is useful in differentiating them from LMS. This protein is overexpressed in ~90% of GISTs, but is not found in LMSs [12].

The treatment of small bowel LMSs is essentially excision of the tumor. The decision to pursue with operative management depends on the stage of disease and expected outcomes. Unlike uterine LMSs, GI LMSs tend to have a low response rate and unsatisfactory outcomes to chemotherapy [13]. There are limited data on radiotherapy in patients with small bowel LMSs. In general, prognosis of the disease is poor, with a 5-year survival rate of ~27% [14].

In conclusion, LMSs of the small bowel are exceedingly rare, particularly challenging to diagnose, and often present at advanced stages due to the silent behavior of these tumors. In this case, we present a rather unusual case presentation of a metastatic small bowel LMS pre-

senting with lower extremity varicose veins. It is essential to discern LMSs from GISTs on a biochemical level as the treatment widely differs. Treatment relies on surgical resection when possible. Prognosis is generally poor, especially in the setting of widespread metastatic disease.

Statement of Ethics

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. The article is exempt from Ethical Committee approval as it is a case report that does not include data collection and analysis.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Karim Abou El Joud contributed to literature review, introduction, and discussion. Misha Abbasi contributed to literature review, abstract, and case presentation.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

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