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Guess the Case

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INTRODUCTION

A 45-year-old woman presented to her primary care physician (PCP) complaining of episodes of vague right sub-costal pain for the past month. She had no associated symptoms, and there were no exacerbating or alleviating factors. She had no recent history of trauma, travel, or illness. She had no significant past medical history. She had a past surgical history of tonsillectomy, cesarean section, tubal ligation, and uterine ablation. Her family history was significant for hypertension, heart disease, and bladder cancer. She had a 30-pack/year smoking history. She denied fever, night sweats, weight loss, or other gastrointestinal symptoms.

On physical examination, she was a well-developed, well-nourished woman in no distress. Her vital signs were: temperature 98.4° F, blood pressure 110/71 mm/Hg, and pulse 77 bpm, regular. Her abdomen was soft, non-tender, non-distended, and bowel sounds were normal. She had no palpable hepatosplenomegaly. She had several tattoos. The remainder of her physical examination was unremarkable. All hematological, electrolyte, and coagulation studies were normal. An erythrocyte sedimentation rate was within normal limits. She worked in healthcare but had never been exposed to tuberculosis nor had a positive tuberculosis skin test (PPD). Results of a test performed the month prior to presentation were negative. An abdomino-pelvic computed tomography (CT) scan ordered by her PCP revealed multiple splenic lesions (Figures 1 and 2). A subsequent positron emission tomography (PET)/CT fusion further characterized the lesions as photopenic, with no increase in metabolism.

Question: What is the diagnosis and what treatment would you recommend?

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Diagnosis and Treatment

The CT examination revealed multiple ring enhancing lesions in the spleen, the largest measuring 2.3 × 2.1 cm. General surgery was consulted and treatment options including image-guided biopsy versus splenectomy were discussed. The patient elected to undergo splenectomy for definitive diagnosis. She was given the appropriate vaccinations 3 weeks before laparoscopic splenectomy was performed. The spleen was placed in an impermeable collection bag and removed without morcellation to facilitate complete histopathologic examination. Her postoperative course was uneventful, and she was discharged home on postoperative day 1. Pathology reported a 95 gram spleen with vascular lesions, consistent with a littoral cell angioma (LCA). Flow cytometry and lymphoma/leukemia screening were performed, and no evidence of malignancy was identified. The vague right sub-costal pain, which had resolved prior to operation, had not recurred as of her most recent follow-up.

DISCUSSION

LCA is a very rare, primary vascular tumor of the spleen arising from normal endothelial cells lining the venous sinuses of the splenic red pulp (littoral cells). LCAs occur over a wide age range and with equal frequency in both males and females. They are most often benign, but a malignant variant has been reported. Vascular neoplasms, in general the most common primary neoplasms of the spleen, are divided into three types by degree of aggressiveness: benign (hemangiomas, lymphangiomas, and hamartomas), intermediate (hemangioendotheliomas), and malignant tumors (angiosarcomas).[1–5]

Histology

LCAs appear grossly as single or more often multiple, nodular lesions. Histologically, they arise from the littoral cells (tall endothelial cells) that normally line the splenic sinuses within the red pulp of the spleen. They are composed of anastomosing vascular channels with irregular luminae, often with papillary projections and cyst-like spaces.[5] The tumor cells have both endothelial and histiocytic characteristics. Immunohistochemical staining reveals expression of CD31, CD68, and CD21, whereas they are negative for CD34 and CD8. CD21 positivity is

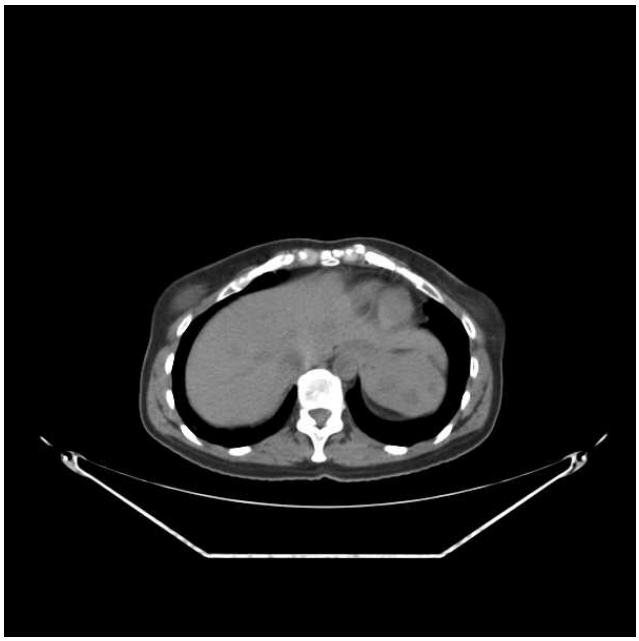

Figure 1. CT scan of splenic lesions.

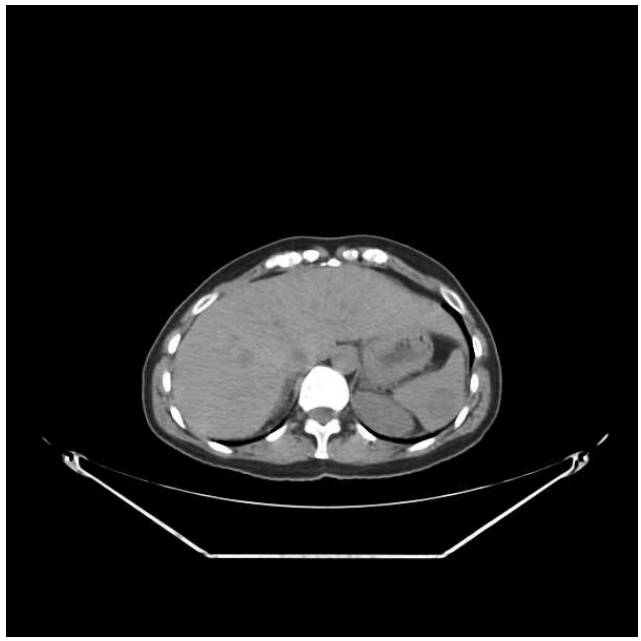

Figure 2. CT scan of splenic lesions.

characteristic of LCA and typically absent in other vascular tumors of the spleen.[1–4,6] Malignant variants of LCA possess cytologically atypical cells and malignant behavior, such as invasion of surrounding organs.[7]

Presentation

The clinical presentation of LCA may include splenomegaly, hypersplenism with thrombocytopenia and/or anemia, fever of unknown origin, or as an incidental finding during work-up of abdominal complaints.[4] LCA has been associated with synchronous malignancy in up to 33% of cases including colorectal, pancreatic, renal cell, gastric, non small-cell lung, seminoma, ovarian, papillary thyroid, cervical, hepatocellular, bladder cancers, and lymphoma.[5,8–10] LCA has also been associated with immune dysregulation, including inflammatory bowel disease, ankylosing spondylitis, immunosuppression after renal transplant, and other immune-mediated diseases.[10] Thus, a high index of suspicion and surveillance for associated malignancy and immune dysregulation may be warranted.

Diagnosis and Treatment

The differential diagnosis for splenic lesions includes posttraumatic, infectious, vascular, metastatic, and primary neoplastic etiologies. In the immunocompromised patient, multiple small splenic lesions can represent disseminated fungal or mycobacterial disease and/or microabscesses. The spleen is a rare site for metastatic disease. Primary malignancies reported to metastasize to the spleen include breast, lung, ovarian, melanoma, and colon cancers. Patients with splenic metastases usually have widely disseminated disease at presentation. Splenic infarcts may be seen with localized processes, such as portal hypertension or pancreatitis, or may arise from an embolic source. Inflammatory pseudotumors are rare, benign lesions of unknown etiology frequently misdiagnosed as benign or malignant neoplasms.[3,11] Lymphoma involving the spleen may be primary or secondary. Common histologic subtypes include large B-cell lymphoma, marginal zone B-cell lymphoma, mantle cell lymphoma, hairy-cell leukemia, and $\gamma\delta$ T-cell lymphoma.[8,12]

The typical appearance of LCA on CT scan is that of multiple hypodense nodules. Consequently, metastatic disease, lymphoma, sarcoidosis, Kaposi's sarcoma, or infectious processes that lead to microabscess formation may mimic LCA.[13] Sonographic and MRI findings may also be nonspecific.[14] Definitive diagnosis cannot be made radiographically and is obtained only through complete histopathologic evaluation. Options for tissue diagnosis include splenectomy versus percutaneous biopsy. Image-guided biopsy is controversial because of potential sampling error, risk of bleeding, and risk of tumor rupture and peritoneal seeding if malignant. Small, single-institutional series have demonstrated efficacy and safety with image–guided splenic biopsy; however, this has not been validated in the current literature.[9,15–16]

Splenectomy is both diagnostic and therapeutic in patients with LCA. Laparoscopic techniques for splenectomy have been shown to be safe and have the benefit of less pain, and shorter hospital stay

and recovery time, as compared with open techniques.[9,17] Rare cases of malignant LCA should be followed for recurrent disease; adjuvant therapy has not been described.[7] Due to the association with synchronous malignancies and immune-mediated disease in some cases, a high index of suspicion for these disease processes is warranted. Due to the small number of cases reported, surveillance practices, after complete excision of benign LCA with no evidence of other disease processes, are not well-defined.

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