Intrarenal Splenosis Diagnosed in an Incidentally Found Left Renal Mass

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ABSTRACT
Intrarenal splenosis is very rare and its management is not well established. We present a patient in whom an enhancing left renal mass was incidentally detected on a Computerized tomographic (CT) scan, concerning for renal cell carcinoma. However, the lesion was determined to represent intrarenal splenosis, confirmed by Technetium-99m (99mTc) sulfur colloid scan and percutaneous biopsy, which revealed splenic tissue. This multimodal approach to diagnosis of an unusual condition spared the patient an invasive procedure.

Introduction
Splenosis is a condition wherein splenic tissue autotransplants into a heterotopic location, typically following abdominal trauma or some form of iatrogenic disruption of normal anatomy. The most common locations for splenic tissue implantation are the small intestine serosa, the greater omentum, parietal peritoneum, the undersurface of the diaphragm, and the pancreatic tail. Intrarenal splenosis represents a rare variant of an uncommon disorder, with few reported cases in the literature.

Case presentation
A 42-year-old female was evaluated for complaints of fatigue and gastrointestinal discomfort. Her only medical history was being struck by a motor vehicle at the age of 11 years for which she was not hospitalized and did not undergo radiological imaging evaluation. Her physical examination, urinalysis, complete blood count, and metabolic panel were all within normal limits. ACT scan was performed and revealed an enhancing 4.6 × 2.8 cm solid mass in the superior pole of the left kidney. The mass caused no distortion of the renal contour, was homogeneously smooth, and sharply demarcated from the adjacent parenchyma (Fig. 1). Notably, the spleen was normal in appearance and size.

Given the patient’s relatively young age and the unusual appearance of the mass on the CT scan, the decision was made to proceed with percutaneous renal biopsy (PRB) of the mass prior to surgery. This was done with CT guidance. Pathological analysis revealed splenic tissue with congestion. A panel of immuno stains was performed and showed negative staining for EMA, HMB45, S100 and desmin. Additionally, AE1/3 highlighted rare tubules, suggestive of fusion of spleen and the kidney. Multiple other stains (CD3, CD5, CD20, CD79a, CD8, SMA, CD34) displayed normal splenic distribution pattern (Fig. 2).

For further confirmation of the diagnosis, a Technetium-99m (99mTc) sulfur colloid scan was performed. Uptake of 99mTc was identical between the renal mass and the spleen, corroborating the percutaneous renal biopsy results. After counseling on treatment options—including partial nephrectomy, ablative therapy, repeat percutaneous biopsy, and observation—the patient elected for...
observation. She underwent follow-up imaging with an MRI at 6 months which showed no change in the appearance of the lesion (Fig. 3).

Discussion

While splenosis is not uncommon, intrarenal splenosis is a rare variant with only four known cases described in the literature, most frequently when splenic tissue is inseparable from the left kidney, giving the impression of an exophytic solid renal neoplasm. In the majority of patients with a diagnosis of intrarenal splenosis, there is a history of previous abdominal surgery or trauma necessitating a splenectomy. The patient described by Brock et al. had previously undergone a splenectomy, and unfortunately intrarenal splenosis was diagnosed only after a nephrectomy was performed for the renal mass. Kiser et al. first used SPECT imaging to confirm their suspicions of intrarenal splenosis. Their patient had also undergone a previous splenectomy for poly-trauma. Kearns et al. also described two patients with a left renal mass that mimicked a renal cell carcinoma. Both of the patients had previous splenectomies. A diagnosis of intrarenal splenosis was made using SPECT imaging.

Our report represents, to the best of our knowledge, the first instance of the diagnosis of intrarenal splenosis in a patient with an otherwise normal spleen on imaging, and no previous major abdominal trauma. Using a combination of percutaneous biopsy of the renal mass and Tc-99m sulfur colloid SPECT imaging, we were able to confirm the diagnosis of intrarenal splenosis, while avoiding unnecessary extirpative surgery.

When splenic heterotopia is suspected, there are numerous ways of establishing that the tissue in question represents splenic tissue. Single-photon emission computed tomography (SPECT) is the most widely used modality and the two radioisotopes most commonly used in determining the presence of splenic tissue are 99mTc-heat-damaged red blood cells and 99mTc-colloid (sulfur colloid or albumin colloid). Labeled red blood cells are made more spleen-specific after damaging them by heating for 20 min in a water bath at 49 ºC–50 ºC. While less specific, use of 99mTc sulfur colloid is more common due to its commercial availability, without requiring pre-preparation of the patient’s own blood. The sulfur colloid distributes well throughout the reticuloendothelial organs, including the suspected heterotopic splenic tissue.

Conclusion

Intrarenal splenosis represents a very rare condition, mimicking lesions arising primarily from the kidney such as neoplasms. If the diagnosis is not suspected and the patient not thoroughly evaluated, the patient is at risk for both misdiagnosis and unnecessary treatment. A high index of suspicion is necessary when a patient presents with a left renal mass and has a history of previous
abdominal trauma involving or in proximity to the spleen. The use of specialized SPECT imaging to identify splenic tissue in combination with percutaneous biopsy of the mass may avoid unnecessary surgical intervention. If the spleen is present, as in our case, the appearance of the heterotopic splenic tissue is identical to the normal spleen on all imaging studies.

**Conflict of interest statement**

None of the authors have any conflicts of interest to disclose. The patient has given her approval for HIPAA compliant presentation of her medical history and imaging.

**References**

1. Kiroff GK, Mangos A, Cohen R, et al. Splenic regeneration following splenectomy for traumatic rupture. *Aust N Z J Surg*. 1983;53:431–434.
2. Fleming CR, Dickson RE, Harrison Jr EG. Splenosis: autotransplantation of splenic tissue. *Am J Med*. 1976;61:414.
3. Kiser JW, Fagien M, Clore FF. Splenosis mimicking a left renal mass. *Am J Roentgenol*. 1996;167:1508–1509.
4. Brock DB, King BF, Hezmali HP, Asterling JE. Splenosis presenting as a left renal mass indistinguishable from renal cell carcinoma. *J Urol*. 1991;146:152–154.
5. Kearns CM, Alexander-Liu HY, Wollin M, Lepor H. Splenosis presenting as a left renal mass: a report of two cases. *Eur Urol*. 1994;26:264–266.