

## Abdominal Splenosiscausing Hydronephrosis- A Case Report

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### 1. Abstract

Splenosis is an uncommon process of intra abdominal or extra abdominal splenic tissue seeding, mostly post traumatic. The issue of splenosis mostly comes up in patients presenting with suspicious nodules in the abdominal or chest cavity.

It is exactly these patients with a history of blunt abdominal trauma who should be considered as candidates for having splenosis and should be screened with a proper medical history and with the use of novel non invasive imaging modalities thus sparing the patients unnecessary and potentially dangerous procedures.

**2. Keywords:** Abdominal splenosis; Peritoneal deposits; Splenic trauma

### 3. Introduction

In patients with a history of blunt abdominal trauma presenting with single or multiple suspicious lesions, be it abdominal or thoracic, it is very important to consider splenosis as a possible culprit [1].

Defined as is an uncommon process of intra abdominal or extra abdominal splenic tissue seeding, mostly post traumatic, splenosis is a chameleon when it comes to presentation depending on the location and size of the heterotropic splenic tissue.

In this case report we present a case of abdominal splenosis presenting as a tumor on the bladder wall causing hydronephrosis.

Modern imaging modalities such as scintigraphy with  $^{99m}\text{Tc}$  labeled heat-denatured erythrocyte could present an accurate and reliable method in diagnosing splenosis without the need for biopsy and with the result of sparing asymptomatic patients unnecessary surgery [1].

### 4. Patient and Observation

A 56 year old male was referred to gastrointestinal surgery department with a 4cm retrovesical mass discovered on a CT scan of the Abdomen.

He initially presented to his urologist for a routine checkup (Figure 1 and 2).



Figure 1: Axial image of contrast enhanced CT showing Hydronephrosis (arrows) Further workup including a CT abdomen and a pelvic MRI showed a mass located behind the bladder and on the anterior wall of the rectum measuring at 4.2\*3.6\*3.4 cm.

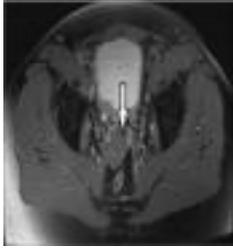


Figure 2: Axial image of contrast enhanced CT showing homogeneously enhancing retrovesical Mass (arrow) T1 weighted images showed a low signal while T2 weighted imaging showed an inhomogeneous high signal with pathological ring enhancement.

Upon doing an ultrasound examination his urologist discovered an enlarged prostate gland and hydronephrosis on both sides.

Further workup including a CT abdomen and a pelvic MRI showed a mass located behind the bladder and on the anterior wall of the rectum measuring at 4.2\*3.6\*3.4 cm.

T1 weighted images showed a low signal while T2 weighted imaging showed an inhomogeneous high signal with pathological ring enhancement (Figure 3).



**Figure 3:** Axial T2 weighted image of contrast enhanced MRI showing a retrovesical mass (arrow) Additionally a second mass measuring 2cm and located on the right lateral side of the bladder was discovered on the MRI showing the same morphology as the first mass.

Additionally a second mass measuring 2cm and located on the right lateral side of the bladder was discovered on the MRI showing the same morphology as the first mass.

Clinical examination showed a healthy 56 year male with no symptoms and no specific clinical pathology upon examination.

At the age of 7 and after a blunt trauma to the abdomen the patient underwent an emergency splenectomy with no complication.

Blood tests showed a renal insufficiency with a GFR of 41 ml/min All tumor markers were negative.

Upon consultation from our urologist the Patient received a double J catheter on the right side.

After proper consultation with our oncologist the patient underwent an exploratory laparoscopy.

The operation revealed a growing purple mass on the backside of the bladder and attached to the ventral side of the rectum wall.

Two morphologically similar masses were also discovered on the right vas deferens and the inner abdominal wall.

All 3 masses were laparoscopically removed and sent to frozen section.

The frozen section showed healthy spleen tissue with no signs of malignancy.

The patient was discharged after 10 days and is doing well.

## 5. Discussion

As discussed earlier, the process of splenosis can occur anywhere in the chest, abdominal or pelvic cavity.

The heterotropic splenic tissues can also maintain splenic function such as immunity against capsulated bacteria and the elimination of aged red blood cells [3, 4].

Presentation ranges from asymptomatic masses discovered in imaging studies to an array of location dependent symptoms such as recurrent episodes of abdominal pain or small bowel obstruction secondary to adhesive bands of splenic

implants. Occasionally, it can cause gastrointestinal bleeding, intraperitoneal nodule infarction, hematoma, enlarging abdominal or pelvic masses, ureteral compression and hydronephrosis or recurrence of hematologic diseases treated with splenectomy [5].

Although the seeding of splenic tissue after splenic trauma reportedly occurs in up to 67% of patients, the true incidence of this rare condition is unknown, partly because splenosis is usually an incidental finding at imaging or surgery [4].

We see only little reference to splenosis in the process of differential diagnosis in many medical text books.

The key to diagnosing splenosis is being aware of this possibility in patients with a history of abdominal trauma or splenectomy.

A lack of typical changes in the blood smear often present after splenectomy (Howell-Jolly bodies, reticulocytosis), and protective levels of antipneumococcal antibodies should raise suspicion of the possibility of splenosis [1].

Although the heterotropic splenic tissue can show up on all imaging modalities including ultrasound, contrast enhanced CT scan and magnetic resonance imaging (MRI), non of these imaging modalities has the specificity to differentiate splenosis from an array of other pathologies [1].

These include but are not limited to : metastatic disease, abdominal lymphoma, hemangiomas, peritoneal mesothelioma, multifocal endometriosis, primary renal or hepatic malignancy, gliomatosis peritonei, granulomatous peritonitis as the consequence of disseminated infection such as tuberculosis or histioplasmosis, rupture of the tumor or a hollow viscus, or, simply, reactive adenopathy [1].

Selective spleen scintigraphy (SSS), which is performed using denatured erythrocytes labeled with Technetium-99m (Tc99m), is the preferred scintigraphic method due to the absence of liver uptake and increased specificity [6 - 11]. The SPECT system, which enables scintigraphic images to be examined in tomographic cross-sections, has further improved the sensitivity of many scintigraphic examinations during the last 10 years and is now routinely used [11].

According to a study published in the journal of molecular Imaging and Radionuclide Therapy 2015 Fe, SSS has a high specificity in the detection of accessory spleens/splenosis. The sensitivity of SSS for detection of accessory spleens/splenosis is higher after splenectomy, and much lower before splenectomy. When compared with other studies, SSS allows scanning accessory

spleens/splenosis in unusual locations [12].

MRI with IV superparamagnetic iron oxide has been used for the diagnosis of splenosis because this contrast agent is specific for the cells of the reticuloendothelial system of the liver and spleen [9]; however, IV iron oxides are no longer readily available in the United States for MRI.

Unless symptomatic, no further therapy for splenosis is required once the diagnosis is confirmed.

One important thing to consider is the possibility of accessory splenic tissue.

Accessory spleens are congenital and arise from the left side of the dorsal mesogastrium during the embryological period of development, whereas splenosis as an acquired condition does not confine itself to embryological boundaries and can occur anywhere in the body.

Other differences include histological differences and the multiplicity of splenic nodules in splenosis with numbers of up to 400 nodules reported [1].

## 6. Conclusion

Splenosis is a chameleon with a wide variety of presentations and localizations.

The cornerstone of diagnosing splenosis is a thorough medical history with special attention to history of abdominal trauma or splenectomy even dating back to childhood as our case report shows.

Once diagnosed using a wide array of imaging modalities no further therapy is required in asymptomatic patients, thus sparing patients unnecessary and potentially dangerous procedures.

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