Case Reports

Arch. Esp. Urol. 2009; 62 (5): 396-399

# SPLENOSIS SIMULATING A RENAL MASS

*Daniel Perez Fentes, Gerardo Pazos Gonzalez[1], Miguel Blanco Parra, Virginia Pubul Nuñez[2], Valentin Toucedo Caamaño, Ana Puñal Pereira, Serafin Novas Castro, Pedro Lamas Cedron and Manuel Villar Nuñez.*

*Department of Urology, Ultrasound Department[1] and Nuclear Medicine Department[2]. Complejo Hospitalario Universitario de Santiago de Compostela. Santiago de Compostela. Spain.*

**Summary.-** *OBJECTIVE: To report a case of splenosis and to review its diagnosis and treatment in the related literature.*

*METHOD: We report the case of an asymptomatic 49-year-old man with splenectomy performed when he was 22. Lumbo-sacral MRI showed a left perirenal mass probably with renal origin.*

*RESULTS: CT scan ruled out the renal origin. Due to previous splenectomy, splenosis was suspected. 99mTc-labeled heat-damaged erythrocytes scan confirmed the diagnosis. No treatment was applied.*

*CONCLUSIONS: Clinicians should be aware that unknown origin masses, mainly in the peritoneal cavity, with a history of previous splenic trauma or splenectomy, might represent splenosis. A non-invasive diagnosis can be achieved with 99mTc-sulphur colloid scan, 99mTc-labeled heat-damaged erythrocytes or ferrumoxide-enhanced MRI, thus avoiding unnecessary surgical explorations.*

**Keywords:** *Splenosis. Diagnosis. Treatment.*

**Resumen.-** *OBJETIVO: Presentar un caso de esplenosis y revisar aspectos diagnósticos y terapéuticos en la literatura relacionada.*

*MÉTODO: Presentamos el caso de un varón de 49 años, esplenectomizado a los 22 años. Hallazgo incidental de una masa perirrenal izquierda en RM lumbo-sacra, de probable origen renal.*

*RESULTADOS: Se realiza TC abdómino-pélvico descartando el origen renal de la masa. Dado el antecedente de esplenectomía la sospecha diagnóstica fue de esplenosis. Se realizó gammagrafía hepato-esplénica con hematíes desnaturalizados marcados con 99mTc confirmando el diagnóstico. Se decidió abstención terapéutica.*

*CONCLUSIONES: Ante el hallazgo de masas de origen desconocido, fundamentalmente en la cavidad peritoneal, debe ser tenida en cuenta la posibilidad diagnóstica de esplenosis, sobre todo si existe un antecedente de lesión esplénica traumática o quirúrgica. Para su diagnóstico se pueden emplear pruebas no invasivas elevada especificidad, como la gammagrafía hepato-esplénica, la gammagrafía esplénica con hematíes desnaturalizados, o la RM con ferumóxido, evitando exploraciones quirúrgicas innecesarias.*

**Palabras clave:** *Esplenosis. Diagnóstico. Tratamiento.*

*CORRESPONDENCE*

Daniel Adolfo Perez Fentes
Servicio de Urologia
Hospital Clinico Universitario de
Santiago de Compostela.
Travesía Choupana s/n.
15706. Santiago de Compostela. (Spain)

danielfentes@yahoo.es

Accepted for publication: September 24th, 2008.

## INTRODUCTION

Ectopic splenic tissue can occur in congenital or acquired forms. The congenital form, called accessory spleen, occurs in 10% of the population, and is more common in women and patients with hematological diseases. Of varying number and size, accessory spleens are usually located in the splenic hilium and pancreatic tail and have their own blood supply which usually arises from the splenic artery or one of its branches (1).

On the other hand, the term splenosis refers to the acquired form, produced by seeding of splenic tissue, generally after trauma or splenectomy.

We present a case of splenosis mimicking a left renal mass, highlighting the importance of the history taking and imaging tests in the differential diagnosis of this entity.

## CASE REPORT

We report the case of a 49-year-old man whose personal history was unremarkable except for splenectomy performed when he was 22 as a result of a traffic accident.

Examined on an outpatient basis for a suspected lumbosacral disc herniation, he was referred to our department for a mass of soft tissue of about 3 cm in diameter found on lumbosacral magnetic resonance imaging (MRI). The mass was situated over the left posterior perirenal space and seemed to be attached to the kidney.

With the initial suspicion of an incidentally diagnosed renal mass, we requested a multislice abdominal pelvic CT scan with intravenous contrast medium that confirmed the existence of a 4.7 x 2.2 cm mass in the left posterior perirenal fat, not attached to the kidney, and simultaneously enhanced other smaller sized masses, that seemed to correspond to ectopic splenic tissue (Figures 1 and 2).

Based on the CT findings and the previous splenectomy, the diagnostic suspicion of splenosis was high. Nevertheless, we decided to complete the diagnosis requesting a 99mTc-labeled heat-damaged erythrocytes scan of liver and spleen that confirmed the existence of two hyperdense foci, one in the theoretical location of the spleen and another measuring 6.2 x 4.6 cm in the perirenal area, compatible with the diagnosis of splenosis (Figure 3). After reviewing the related literature, and seeing that the patient was asymptomatic, we decided to refrain from treatment.

## DISCUSSION

The term splenosis refers to the existence of viable and functionally active splenic tissue outside of its usual anatomic location as a result of splenic rupture via trauma or surgery that leads to seeding of small fragments of splenic tissue in the abdominal cavity. First described by Buchbinder and Lipkoff in 1939, splenosis has been reported to occur in 26-67% of patients after trauma associated with splenic rupture or after splenectomy (2,3). Of varying size, splenosis shows a sessile growth pattern

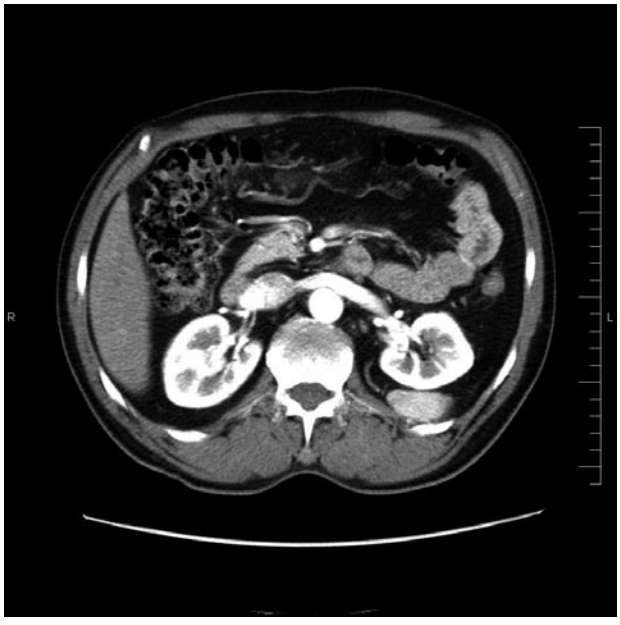

*FIGURE 1. Abdominal-pelvic CT scan. Axial section.*

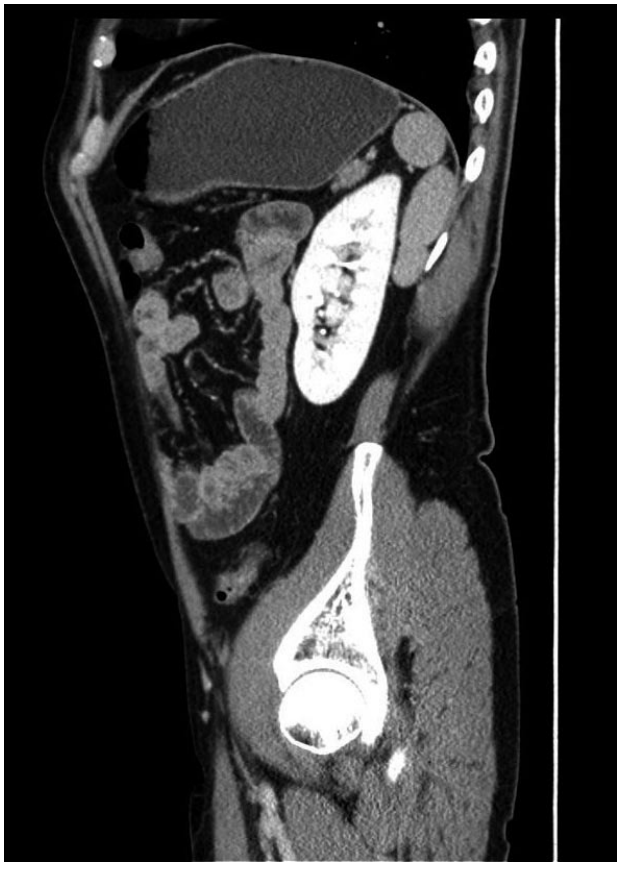

*FIGURE 2. Abdominopelvic CT scan. Sagittal section.*

and lacks its own blood supply, unlike accessory spleen. It is most frequently located in the serous surface of the small intestine, followed by the greater omentum, parietal peritoneum, large intestine, diaphragm undersurface, and thorax in cases of associated diaphragmatic injury (4). The usual mechanism of seeding of splenic tissue is by local dissemination after trauma or surgery that results in rupture of the splenic capsule. However, a case of intracerebral splenosis has been reported that could be explained by hematogenous seeding (5).

Splenosis is usually asymptomatic. Most of the cases recorded in the literature were detected on autopsy, during abdominal surgical procedures, or were found incidentally in imaging tests requested for another reason. However, some cases may present clinically as intestinal obstruction, bleeding or diffuse abdominal pain (6).

Splenosis requires differential diagnosis with tumors in other locations, such as the pancreas, adrenal gland or kidney, and an adequate history is essential to allows us to recognize a history of previous splenic trauma or splenectomy (2,6,7). Splenosis has often been reported to be mistaken for tumor recurrences in patients subjected to radical nephrectomy in whom the spleen was accidentally injured (3,4,7,8).

Conventional imaging methods (ultrasound, CT) do not achieve sufficient specificity for the diagnosis of splenosis, and often lead to a false diagnosis of tumor. However, diagnostic accuracy can be improved by the use of multislice CT. While less definitive than surgical diagnosis, the tests with the greatest specificity for the diagnosis of both normal and ectopic splenic tissue are 99mTc-sulfur colloid liver-spleen scintigraphy, 99mTc-labeled heat-damaged erythrocytes spleen scintigraphy and ferumoxide-enhanced MRI (9,10).

Liver-spleen scintigraphy is based on the property of the of 99mT sulfur colloid to be sequestered by reticuloendothelial cells, with 80% of the particles administered being distributed to the liver, 15% to the spleen and the remaining 5% to the bone marrow.

Although technically more complex, scintigraphy using 99mTc heat-damaged erythrocytes is very useful for detecting ectopic splenic tissue, because it mainly reveals splenic tissue. It is based on the ability of this tissue to filter morphologically anomalous red blood cells, which remain deposited in its interior.

On the other hand, ferumoxide-enhanced MRI is used in the detection of hepatic and splenic tumors. Ferumoxides are contrast agents composed of superparamagnetic crystalline particles of ferrous-ferric oxide that are preferentially taken up by reticuloendothelial cells, causing a brief increase in T2 signal intensity followed by a characteristic rapid decrease (10).

The existence of functional ectopic splenic tissue may lead to partial recovery of splenic function in splenectomized patients. However, when splenectomy is indicated in the presence of hematological disorders such as thrombocytopenic purpura or hemolytic anemia, it may be the cause of treatment failure (4).

In general, the recommended approach to diagnostic confirmation of splenosis, in the absence of clinical manifestations, is abstention from treatment (6).

## CONCLUSIONS

Clinicians should be aware that unknown origin masses, mainly in the peritoneal cavity, with a history of previous splenic trauma or splenectomy, might represent splenosis. A noninvasive diagnosis can be achieved with 99mTc-sulfur colloid scan, 99mTc-labeled heat-damaged erythrocytes or ferumoxide-enhanced MRI, thus avoiding unnecessary surgical explorations.

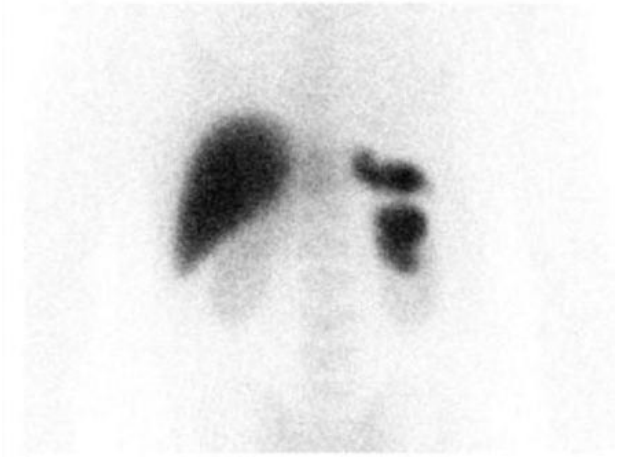

*FIGURE 3. Liver-spleen scintigraphy using 99mTc-labeled heat-damaged erythrocytes.*

## REFERENCES AND RECOMENDED READINGS
## (*of special interest, **of outstanding interest)


1. Avila Padilla J, Papiol Grau A, Martí Hernández M, Querol Borras V. Bazo supernumerario pararrenal derecho. Actas Urol Esp, 1997; 21 (10):1003-1006.
2. Kiser JW, Fagien M, Clore FF. Splenosis mimicking a left renal mass. AJR Am J Roentgenol, 1996; 167 (6):1508-1509.

**3. Umemoto S, Miyoshi Y, Nakaigawa N, Yao M, Takebayashi S, Kubota Y. Distinguishing splenosis from local recurrence of renal cell carcinoma using a technetium sulfur colloid scan. Int J Urol, 2007; 14 (3):245-247.

*4. Pumberger W, Wiesbauer P, Leitha T. Splenosis mimicking tumor recurrence in renal cell carcinoma: detection on selective spleen scintigraphy. J Pediatr Surg, 2001; 36 (7): 1089-1091.

5. Rickert CH, Maasjosthusmann U, Probst-Cousin S. et al. A unique case of cerebral spleen. Am J Surg Pathol, 1998; 22: 894-896.

**6. Echenique Elizondo M, Arrosagaray J, Sanz Jaka JP. Esplenosis: una entidad infradiagnosticada. Arch Esp Urol, 2001; 54 (10): 1133-1135.

7. Perry KT Jr, Zisman A, Singer J, Schulman P. Splenosis presenting as a right suprarenal retroperitoneal mass. J Urol, 2002; 168 (2): 644-645.
8. Varkarakis J, Neururer R, Steiner H, Bartsch G, Peschel R. Splenosis mimicking local recurrence after laparoscopic radical nephrectomy. Urology, 2003; 62 (3): 552.
9. Imbriaco M, Camera L, Manciura A, Salvatore M. A case of multiple intra-abdominal splenosis with computed tomography and magnetic resonance imaging correlative findings. World J Gastroenterol, 2008; 14 (9): 1453-1455.
10. Berman AJ, Zahalsky MP, Okon SA, Wagner JR. Distinguishing splenosis from renal masses using ferumoxide-enhanced magnetic resonance imaging. Urology, 2003; 62 (4): 748.