

Post Traumatic Splenosis: A Neoplastic Mimic

V Giblin, S Williams

Citation

V Giblin, S Williams. *Post Traumatic Splenosis: A Neoplastic Mimic*. The Internet Journal of Surgery. 2005 Volume 8 Number 2.

Abstract

Background: Splenosis represents the autotransplantation of splenic tissue, often secondary to splenic trauma or surgery by which viable splenic cells and pulp disseminate and implant into the peritoneal cavity

Case Presentation: A middle aged asymptomatic man with a history of low grade liposarcoma (1998) and splenectomy (46 years ago) was found to have multiple intraabdominal and retroperitoneal masses on follow up CT scanning which represented not malignant dissemination but splenosis.

Conclusion: Splenosis is often an asymptomatic mimic of neoplasia and can cause confusion when discovered incidentally if the diagnosis is not considered.

BACKGROUND

Splenosis is defined as the autotransplantation of splenic tissue following disruption of the splenic capsule during trauma or elective surgery. It is thought that displaced splenic cells or pulp come to lie in new positions in the peritoneal cavity and more rarely extraperitoneally, adhere, and subsequently grow into functional nodules.

Generally, identification of these usually asymptomatic masses is incidental at laparotomy, laparoscopy or following radiological examination conducted for other reasons. Here we present a case of splenosis in the setting of a history of malignancy which illustrates well the potential for diagnostic confusion that can be caused by this entity.

CASE PRESENTATION

A 55 year old gentleman, who had undergone resection of a low grade supraclavicular liposarcoma in 1998, attended routine follow up at the Royal Marsden Hospital Sarcoma clinic. On examination he was found to have a firm supraclavicular mass suspicious of disease recurrence.

CT scan of thorax, abdomen and pelvis not only confirmed disease recurrence (Figure 1) but also revealed multiple homogeneous soft tissue masses the largest of which was in the left renal bed (kidney and spleen were absent), others were seen anterior to the stomach and posterior to the right kidney (Figures 2 and 3). No lesions were noted in the lungs.

Figure 1

Figure 1: Axial CT scan of the neck showing recurrent liposarcoma (arrow) on the right side.

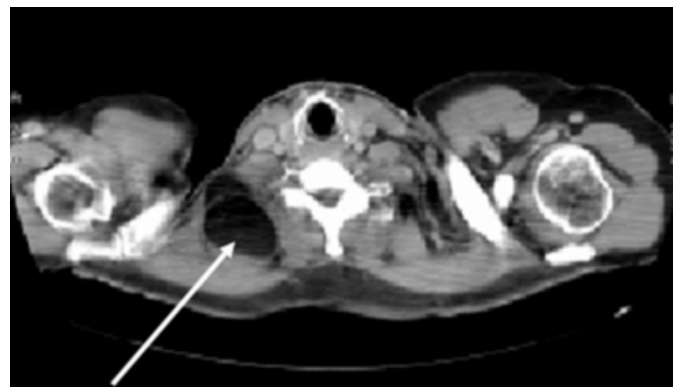


Figure 2

Figure 2: Axial CT scan showing splenosis nodules (arrows) in the splenic bed and posterior to the remaining kidney (right)

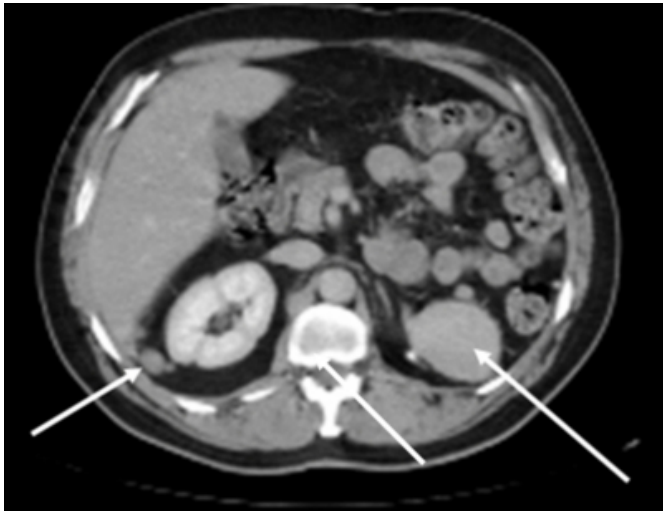


Figure 3

Figure 3: Coronal CT scan showing splenosis nodules (arrows) in the splenic bed and posterior to the remaining kidney (right)



The density of the masses was characteristic of splenic tissue. On questioning the gentleman revealed he had been involved in a road traffic accident 46 years previously in which his spleen had 'been destroyed' and following which he had undergone a splenectomy and left nephrectomy. He had had no abdominal imaging or surgery since this time.

A peripheral blood smear revealed the absence of Howell-Jolly bodies indicating the presence of splenic function. No further investigations were carried out as the original tumour had been low grade with a tendency for local recurrence but not distant metastases.

The masses represent splenosis, a common sequela of

splenic rupture and not metastases from the primary disease with which these might understandably have been confused had the primary tumour been more aggressive.

DISCUSSION

Bunchbinder and Lipkoff were the first to coin the term 'splenosis' in 1939⁽¹⁾. They used it to describe the multiple peritoneal implants found at laparotomy in a woman thought initially to have endometriosis but in whom the nodules histologically proved to be composed of splenic tissue.

The incidence of this condition is unknown as it is usually an incidental finding. However, by scanning patients who have undergone splenectomy after trauma or for haematological conditions authors have given an estimated incidence of 58-67%^(2,3,4).

The pathogenesis of this condition is unclear although it obviously results from the dissemination of splenic material throughout the peritoneal cavity commonly following trauma or splenectomy for haematological conditions. Experiments by Griffini and Tizzani in dogs in 1883 had already shown that splenic tissue was capable of autotransplantation⁽⁵⁾. Splenic material implants where it can obtain a blood supply⁽⁶⁾.

The tissue itself is functional immunologically, and may offer protection against the complications of asplenia depending on the volume of tissue present. At least 20-30cm³ must be present for splenic function to be noticeable^(3,7).

Direct seeding and implantation certainly offers an explanation for those deposits found on serosal visceral surfaces intraabdominally as well as intrathoracically^(8,9) (where there has been direct communication with the abdominal cavity following thoracoabdominal trauma or a congenital breach) or indeed, retroperitoneally⁽¹⁰⁾, as in case described here, following retroperitoneal trauma or surgery. In all these cases the masses were initially thought to be malignancies.

Direct communication however, fails to explain cases found within the gastric wall or intrahepatically. Von Stubenrauch first showed that splenic pulp could embolise to the liver (in dogs) via the splenic veins⁽⁶⁾. Since then case reports of both dogs⁽¹¹⁾ and humans⁽¹²⁾ have confirmed this phenomenon.

The splenic nodules seen in cases of splenosis differ from those in other recognised causes of ectopic splenic tissue (splenunculi, accessory spleen). The latter are histologically

and functionally identical to the normal spleen which they generally lie close to, have a hilum carrying a branch of the renal artery and are rarely more than 5 in number₍₁₃₎. In contrast, splenosis nodules are numerous (up to 100) appearing in any location particularly on serosal surfaces and though encapsulated, have no well defined hilum₍₁₃₎. Authors have varying views on the histological similarity₍₁₄₎ or difference₍₁₃₎ of this tissue to that of the normal spleen but it has been found to maintain normal opsonisation and α globulin activity₍₁₅₎ and can remove Howell-Jolly bodies from erythrocytes₍₁₆₎.

Splenosis is usually asymptomatic although rarely it may cause gastrointestinal haemorrhage₍₆₎, bowel obstruction or abdominal pain. On the whole, the discovery of the lesions is unexpected but it is important to be aware of a patient's previous medical history from which suspicions may be raised as to the diagnosis.

Investigations to aid in the diagnosis include peripheral blood smears. Erythrocytes lack Howell-Jolly bodies where splenic function has resumed after a splenectomy₍₁₅₎. Should further identification be necessary imaging using Tc^{99m} sulphur colloid radionuclide studies identify splenic tissue₍₂₎.

Excision of the nodules should only be considered if the patient suffers complications such as pain or obstruction as otherwise they appear of no clinical significance and may even be of immunological benefit while further surgery may cause its own complications. The exception to this may be where splenectomy was performed electively in haematological conditions and resumption of splenic function is detrimental.

In summary, splenosis is usually an asymptomatic, incidental finding with no requirement for further treatment. The condition can however cause confusion and concern when discovered at laparotomy or radiologically as it can mimic metastases in which case the patient's past medical history should always be borne in mind. Where a splenectomy has been carried out in the past, the diagnosis of splenosis should be considered.

CORRESPONDENCE TO

Victoria Giblin Email: drgiblin@yahoo.co.uk Tel: 0207

8082785 or 07776145256 Fax: 0207 8082232

References

1. Buckbinder JH, Lipkoff CJ. Splenosis: multiple peritoneal implants following abdominal injury. *Surgery* 1939;6:927-934.
2. Derin H, Yetkin E, Ozkiliç H, Ozekli K, Yaman C. Detection of splenosis by radionuclide scanning. *Br J Radiol* 1987;60:873-875.
3. Corraza GR, Tarozzi C, Vaira D, Frisoni M, Gasbarrini G. Return of normal splenic function after splenectomy: how much tissue is needed? *BMJ* 1984;289:861-864.
4. Livingstone CD, Levine BA, Lecklinter ML et al. Incidence and function of residual splenic tissue following splenectomy for trauma in adults. *Arch Surg* 1983;118:617-620.
5. Harouna Y, Seibou A, Abarchi H, Rakotomalala J, Gazi M, Bazira L. Splenose peritoneale: à propos d'un cas révélé par une masse sous-hepatique. *Médecine s'Afrique Noire* 2000;47(6):310-312.
6. Martin Arévalo, J, Flor Lorente B, Ramos Soler D et al. Esplenosis gástrica: causa infrecuente de hemorragia digestiva alta. *Cur Esp* 2000;68:271-273.
7. Ludtke FE, Mack SC, Schuffwerner P, Voth E. Splenic function after splenectomy for trauma: role of autotransplantation and splenosis. *Acta Chir Scand* 1989;155:533-539.
8. Alaraj AM, Chamoun RB, Dahdaleh NS, Sfeir PM, Miski MS, Otrock ZK, Skaf GS. Thoracic splenosis mimicking thoracic schwannoma: case report and review of the literature. *Surg Neurol*. 2005;64(2):185-8; discussion 188
9. Papakonstantinou C, Christoforidis E, Vasiliadis K, Kanellos I, Zarogoulidis K. Thoracic splenosis twenty-nine years after traumatic splenectomy mimicking intrathoracic neoplasm. *Eur Surg Res*. 2005 Jan-Feb;37(1):76-8.
10. Forino M, Davis GL, Zins JH. Renal splenic heterotopia, a rare mimic of renal neoplasia. Case report of imaging and fine-needle aspiration biopsy. *Diagn Cytopathol* 1993;9:565-569.
11. Knostman KAB, Weisbrode SE, Marrie PA, Worman JL. Intrahepatic splenosis in a dog. *Vet Pathol* 2003;40:708-710
12. Davidson LA, Reid IN. Intrahepatic splenic tissue. *J Clin Pathol* 1997;50:532-533.
13. Fleming CR, Dickson ER, Harrison EG. Splenosis: autotransplantation of splenic tissue. *Am J Med* 1976;61:414-419.
14. Carr NJ, Turk EP. The histological features of splenosis. *Histopathology* 1992;21:549-553.
15. Likhite VV. Opsonin and leukophilic α -globulin in chronically splenectomized rats with and without heterotopic autotransplanted splenic tissue. *Nature* 1975;253:742-744.
16. Widmann W, Laubscher FA, Davidson SJ, Grenoble RA. Effect of splenectomy and splenosis on the blood and platelet count and red cell morphology. *Milit Med* 1971;136:15-19.
17. Sirinek KR, Livingston CD, Bova JG, Levine BA. Bowel obstruction due to infarcted splenosis. *South Med J*. 1984 Jun;77(6):764-7.

Author Information

Victoria Giblin

Royal Marsden Hospital

Sarah L. Williams

Royal Marsden Hospital