Inflammatory pseudotumor of the spleen
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Patient: 23 years, male

Clinical History:

A 23 year old male was admitted to our hospital because of vague abdominal pain located in the right upper quadrant.

Imaging Findings:

Physical examination and laboratory tests were unremarkable. Past history was significant only for a minor abdominal trauma occurring 10 years ago. Ultrasonography revealed a 2.5 cm hypoechoic mass in the lower pole of a normal sized spleen. CT confirmed the presence of an iso- to hypo-dense splenic mass. There was no evidence of invasion of surrounding structures or lymphadenopathy. Images obtained after i.v. administration of contrast medium showed a mild homogeneous enhancement of the mass in a delayed phase. MRI utilizing a T1-weighted spin echo (SE) series (TR/TE = 360ms/20ms) and a T2-weighted fast spin echo (FSE) series (TR/TE = 3200ms/100ms and TR/TE = 5400ms/105ms) demonstrated the splenic mass in greater detail. The patient denied fine-needle aspiration biopsy or splenectomy and was followed-up for 30 months. There was a gradual increase in the size of the mass reaching finally 7.8 cm in diameter. The imaging characteristics -except for the size- remained the same. Splenectomy was finally performed.

The tumour was well-circumscribed and had a whitish stellate centre and a peripheral rim. Microscopic examination of the tumour showed spindle cells loosely arranged in a hyaline stroma without significant hypechromacia or cytologic atypia. Mitotic figures were rare but atypical. Inflammatory infiltration by plasma cells, lymphocytes and histiocytes was also seen. There was a central stellate area of fibroblastic proliferation and hyalinization. Accordingly, the diagnosis of IPT of the spleen was made.

Discussion:

Inflammatory Pseudo-Tumours (IPTs) occur predominantly in middle-aged or older women [1]. They appear to represent a non-neoplastic reparative process that occurs in response to various causes of injury including infection, trauma, ischemia or an autoimmune disorder [1]. However, their exact pathogenesis remains uncertain [1]. Most IPTs are solitary but multiple nodules have also been reported [1]. IPTs vary greatly in size and may be as large as 17 cm in diameter [1-3]. Presenting symptoms seem to correlate with the size of the tumour [1-3]. Patients with IPT of the spleen measuring more than 5 cm are almost always symptomatic, complaining for left upper quadrant abdominal discomfort or pain, fever, weight loss and malaise [2,3]. Laboratory abnormalities are present in almost half the cases and mainly include elevated erythrocyte sedimentation rate, anaemia and leukocytosis [1-3].
Hyperglobulinemia, hypercalcaemia and thrombocytosis have also been reported. All these laboratory abnormalities usually resolve when the lesion is removed [1-3].

The sonographic appearance of spleen IPTs is usually hypoechoic, while Doppler US reveals a hypovascular mass [2,3]. Non-enhanced CT demonstrates a discrete hypodense splenic mass, occasionally with calcifications in the central or peripheral portions [2,3,5]. After a bolus injection of contrast medium, there is a progressive enhancement of the lesion [2,3,5]. In addition, there is usually a central stellate area of low attenuation that becomes hyperdense in a delayed phase and corresponds to focal area of fibrosis [2,3,5]. This central stellate area has been reported to be suggestive of IPT [2,3,5].

On T1- and T2-weighted images IPT is usually iso- or hypointense becoming more heterogeneous on T2-weighted with respect to the surrounding normal spleen, a finding that corresponds to the fibroid stroma within the mass [2,3,5]. A central low intensity stellate area and a peripheral hypointense rim are better demonstrated on T2-weighted images [2,3,5]. These findings correspond histologically to the above-mentioned areas of fibroblastic proliferation and show delayed enhancement [2,3,5]. On T1-weighted images after administration of contrast medium, a mild to moderate enhancement of the mass is depicted [2,3,5].

There are only 2 published cases concerning the natural history of splenic IPT and both reported an increase in size during a period of one year [2,3]. Our case is the only one with a follow-up time of 30 months. We also noticed a gradual increase in size of the mass while the radiological architecture of the lesion remained the same.

Splenectomy [open or laparoscopic] is the only treatment option for splenic IPT and diagnosis must always be confirmed histologically [2,3]. There are no reports of recurrence [2,3]. Our patient is in excellent condition approximately 5 years after the removal of the IPT.

**Differential Diagnosis List:** Inflammatory pseudotumor of the spleen

**Final Diagnosis:** Inflammatory pseudotumor of the spleen

**References:**


Description: Ultrasonography of the upper abdomen demonstrates a well-defined hypoechoic mass 2.7 cm in diameter located in the lower pole of a normal-sized spleen. Origin:
Figure 2

a

Description: CT images before CM administration: confirms the presence of a hypodense splenic mass. There is no significant enhancement of the lesion. Origin:

b

Description: CT images after i.v. contrast medium administration: confirms the presence of a hypodense splenic mass. There is no significant enhancement of the lesion. Origin:
Description: On T2 weighted FSE images the mass is iso-hypointense. A central hypointense stellate area with a peripheral rim is noted. Origin:
Description: CM enhanced T1 WI in 60 sec demonstrates respectively a mild to moderate inhomogeneous enhancement of the splenic mass. Origin:

Description: CM enhanced T1 WI in 360 sec demonstrates respectively a mild to moderate inhomogeneous enhancement of the splenic mass. Origin:
Figure 5

Description: T1 WI performed one year after the presentation of the mass. The lesion has obviously increased in size, but with preservation of its internal architecture. **Origin:**

Description: CM enhanced T1 WI performed one year after the presentation of the mass. The lesion has obviously increased in size, but with preservation of its internal architecture. **Origin:**
Description: T2 WI better demonstrates the low signal central stellate area and the faint peripheral hypointense rim of the splenic mass (arrows) **Origin:**
Description: Finally CM enhanced CT 30 months after the initial examination demonstrates the lesion has increased in size. No invasion of the surrounding structures is noticed.

Origin:
**Description:** Surgical preparation of the spleen with the tumour in section. A well circumscribed tumour with a whitish stellate center and a peripheral rim is present. **Origin:**
Description: Thick fibrous tissue separates normal splenic parenchyma from inflammatory pseudotumor. (C+H stain, 40 x). Origin:

Description: Spindle myofibroblasts accompanied by small lymphocytes and plasma cells (C+H stain, 400 x). Origin:
Description: Spindle cells immunoreactive for smooth muscle actin (SMA). Origin: