

## Inflammatory Pseudotumor of the Spleen: Ultrasound and Computed Tomographic Findings

T. Franquet,<sup>1</sup> M. Montes,<sup>2</sup> M. Aizcorbe,<sup>3</sup> J. Barberena,<sup>1</sup> Y. Ruiz De Azua,<sup>2</sup> and F. Cobo<sup>3</sup>

Departamentos de <sup>1</sup>Radiodiagnostico, <sup>2</sup>Anatomia Patológica, y <sup>3</sup>Cirugía, Hospital "Virgen del Camino," Pamplona, Spain

**Abstract.** Inflammatory pseudotumor of the spleen is an extremely rare benign lesion characterized by a wide spectrum of nonspecific inflammatory and reparative changes.

The ultrasound and computed tomographic (CT) findings of inflammatory pseudotumor affecting the spleen in an asymptomatic patient are reported. The CT scanning revealed a partially calcified mass showing a nonhomogeneous enhancement after contrast injection. After 3 min of bolus administration, an unenhanced central area, which corresponds to a focal area of fibrosis, was demonstrated.

**Key words:** Spleen, neoplasms – Spleen, ultrasound – Spleen, computed tomography – Abdominal, calcifications.

Inflammatory pseudotumor is an ill-defined entity of unknown origin presenting as a mass lesion composed of a mixture of inflammatory cells including plasma cells, lymphocytes, foreign body giant cells, histiocytes, foam cells, and numerous vascular elements. Their occurrence in the spleen is extremely rare, and to our knowledge, only 5 cases have been previously reported [1-4].

We report the ultrasound and computed tomographic (CT) findings of 1 surgically proven case of inflammatory pseudotumor of the spleen.

### Case Report

A 49-year-old female was studied at our institution for a mild chronic anemia. A rounded eggshell-rim calcification was discovered in the left upper quadrant during routine abdominal

plain film (Fig. 1 A). Sonography revealed a large splenic mass partially calcified, showing a predominantly echogenic pattern occupying most of the spleen (Fig. 1 B). High-level echoes with acoustic shadowing were identified corresponding to calcified areas. Nonenhanced CT examination revealed a hypodense mass with a peripheral rim calcification. Dynamic scanning during bolus injection of contrast material showed a progressive contrast enhancement of the mass. An hypodense nonenhanced central area persisted within the mass after contrast administration (Fig. 1 C).

Splenectomy was performed. The spleen weighed 250 g and revealed no external abnormalities. Cross section disclosed a firm, rounded, and somewhat lobulated well-defined mass covered by partially calcified capsule. The surrounding splenic parenchyma was compressed but it was otherwise normal (Fig. 2).

Microscopic examination revealed a mixture of inflammatory cells including mature plasma cells, histiocytes, foam cells, fibroblasts, and numerous vascular elements. Scattered Russel bodies were also observed in microscopic sections. Focal areas of fibroblastic proliferation and hyalinization were present, appearing as a stellate area on the gross specimen. Peripherally, the fibroblastic proliferation was more significant, forming a partially calcified pseudocapsule.

### Discussion

Inflammatory pseudotumor is a benign well-circumscribed mass, usually solitary, composed of foci of inflammatory cells, mainly plasma cells, and lymphocytes in a fibroblastic stroma. Although its precise etiology remains unknown, it is considered by most pathologists to represent a reparative process of an inflammatory lesion. Inflammatory pseudotumors have been reported in several locations such as the orbit, spinal meninges, digestive system, heart, soft tissues, mesothelial membranes, and respiratory tract [1]. Splenic involvement is extremely rare, with only 5 cases reported in the English literature [1-4]. Clinically, inflammatory pseudotumors are asymptomatic; however, a palpable mass may be discovered on physical examination.

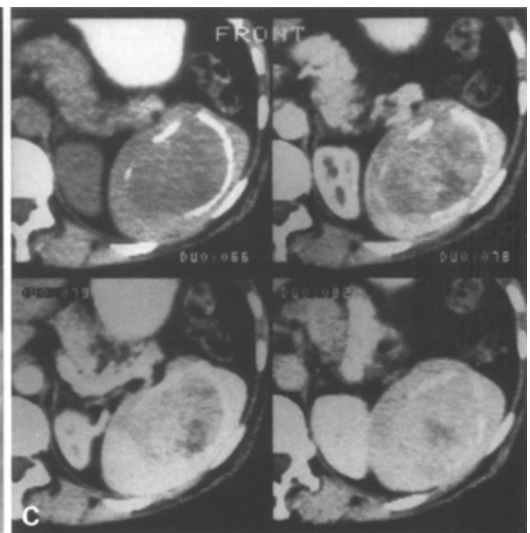
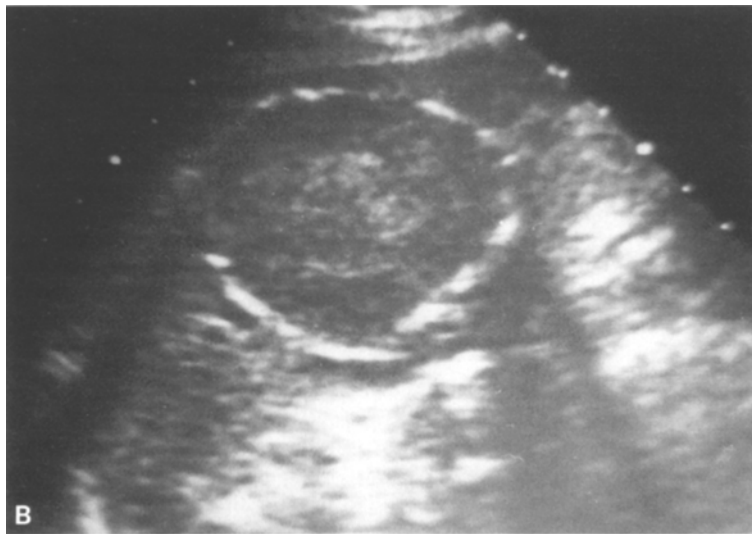
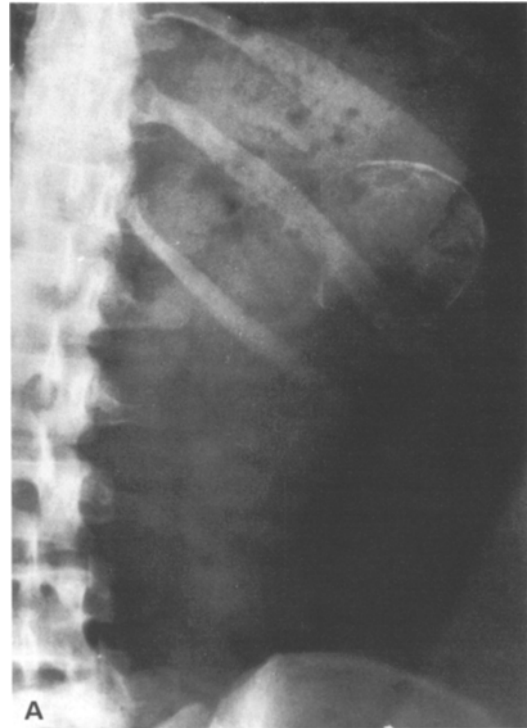
Plain abdominal film may disclose splenome-

Address reprint requests to: T. Franquet, M.D., Departamento de Radiodiagnóstico, Hospital "Virgen del Camino," c/Irunlarrea s/n, Pamplona 31008, Spain

**Fig. 1.** **A** Plain radiography of the abdomen. A curvilinear calcification is observed at the left upper quadrant corresponding to a partially calcified splenic mass.

**B** Sonogram reveals a large, solid, echogenic mass occupying most of the spleen. There is a thick echogenic rim, partially calcified, showing high-level echoes with associated acoustic shadowing.

**C** Sequential dynamic CT scans show a large partially calcified splenic mass of lesser attenuation than surrounding peripheral normal spleen. After bolus administration, enhancement is observed remaining a central unenhanced area within the mass corresponding to a plaque of fibrosis.

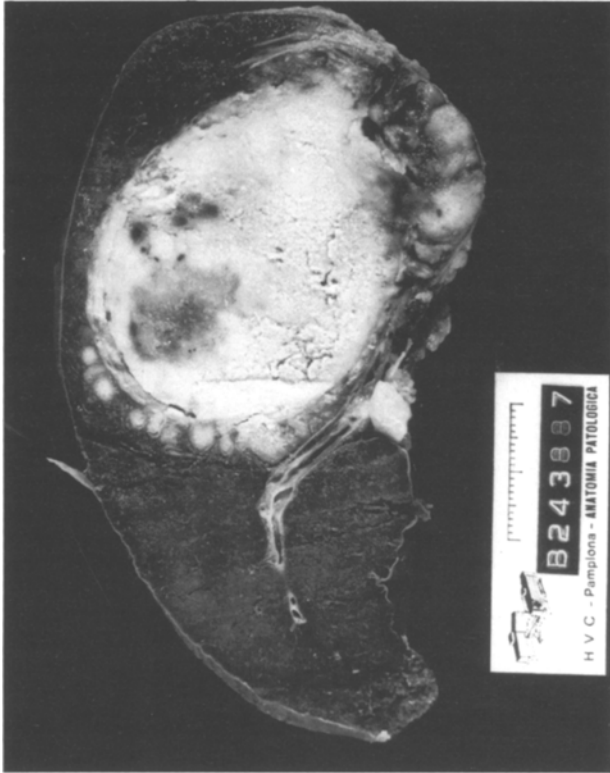


galy and curvilinear calcification in the splenic area. Sonography shows a large, partially calcified, well-defined echogenic mass. Nonenhanced CT examination demonstrates a rounded mass with low attenuation values and partial calcification. Following bolus administration, contrast enhancement was observed with a progressive opacification of the lesion. After 3 min of total opacification, a central nonopacified area persisted within the mass. This central hypodense zone corresponds to

a focal area of fibrosis with a clear pathologic correlation with the gross specimen.

The differential diagnosis of focal splenic masses with calcification is extensive and includes splenic cysts, hamartoma, hemangioma, lymphangioma, and plasmocytoma [5].

The presence of a central stellate area corresponding to a fibrous plaque on CT examination after contrast administration is very suggestive of inflammatory pseudotumor.



**Fig. 2.** Corresponding hemisected gross specimen shows a large solid splenic mass with a thick partially calcified capsule surrounded by normal spleen. A central stellate fibrotic area is observed corresponding to nonenhanced area visualized on CT.

## References

1. Cotelingam JD, Jaffe ES: Inflammatory pseudotumor of the spleen. *Am J Surg Pathol* 8:375-380, 1984
2. Misawa K, Kamiizumi Y, Nishibe M, Saiki I, Watanabe S, Sano H, Kawamura A: A case report of inflammatory pseudotumor of the spleen. *Nippon Shekakibyō Gakkai Zasshi* 82:1799-1802, 1985
3. Alpern HD, Olson JE, Kozak AJ: Inflammatory pseudotumor of the spleen. *J Surg Oncol* 36:46-49, 1986
4. Saito H, Fujita N, Morita Y, Uchino J, Nojima T, Imai N: A case of splenic inflammatory pseudotumor. *Rinsho Hoshasen* 31:1151-1154, 1986
5. Gray EF: Calcifications of the spleen. *AJR* 51:336-351, 1944

*Received: April 14, 1988; accepted: May 7, 1988*