

Contrast sonographic appearance of sclerosing angiomatoid nodular transformation of the spleen

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Sclerosing angiomatoid nodular transformation (SANT) of the spleen is a rare benign vascular tumour whose pathogenesis is unclear. Defined as a distinct entity for the first time in 2004 [1], SANT consists of multiple angiomatoid nodules surrounded by fibrous tissue that often forms a central scar. Typical features at computed tomography and magnetic resonance are characterized by a solitary mass with early peripheral enhancing radiating lines [2].

We report a case of an otherwise healthy 40-year-old female patient who underwent a grey-scale abdominal sonography for dyspepsia in our hospital; a splenic solid mass was incidentally detected. The patient had no symptoms related to the splenic mass.



Fig. 1 Grey-scale sonography of the spleen. Longitudinal view. An isoechoic solid mass of the spleen, 70 mm in diameter, with a thick hyperechoic band with posterior acoustic shadowing in the centre and well-defined margin is shown between the calipers

The grey-scale sonography revealed a single isoechoic solid mass, 70 mm in diameter, bulging from the inferior portion of the spleen, with a thick hyperechoic band with posterior acoustic shadowing in the centre and well-defined margin (Fig. 1). The spleen was normal in size. The colour-Doppler of the mass revealed the presence of peripheral and intranodular arteries (Fig. 2).

The focal splenic mass presented many arterial branches running in a straight line from the periphery to the centre with a spoke wheel pattern in the very early arterial phase on contrast-enhanced ultrasound (CEUS) after the injection of 2.4 ml contrast medium (SonoVue®). The mass was homogeneously enhanced in the full arterial phase; the mass appeared slightly hypoechoic in the venous phase in comparison with the parenchyma of the spleen (Fig. 3).

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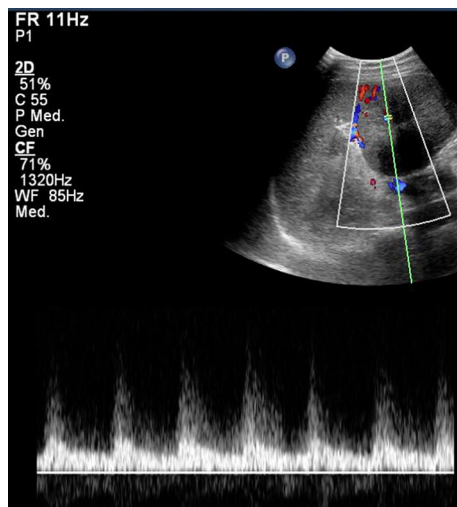


Fig. 2 Color-Doppler sonography of the splenic mass. Arterial vessels are identified inside the mass

The magnetic resonance examination confirmed the spoke-wheel structural appearance of the mass (Fig. 4). The patient gave informed written consent for all imaging examinations. The patient underwent splenectomy; SANT of the spleen was diagnosed at the pathologic examination (Fig. 5).

Previous computed tomography and magnetic resonance studies have demonstrated that SANT of the spleen shows peripheral enhancing radiating lines in 88 % of cases [2]. Real-time continuous imaging is a unique characteristic of CEUS, making the technique particularly suitable for the detection of rectilinear arteries, as this single case clearly illustrates. Contrast-enhanced ultrasound can, therefore, provide an immediate diagnostic clue of SANT of the spleen. Nevertheless, this is a very rare lesion, with only a few cases of its CEUS features reported in the literature [3]. Actually, this single case confirms the grey-scale, color-Doppler, and CEUS characteristics previously described by Gutzeit et al. [3], thus strengthening the reliability of CEUS in diagnosing SANT of the spleen. The importance of recognizing the CEUS appearance of SANT of the spleen is even determined by its hypoechoic aspect in the venous phase, since it may be erroneously diagnosed as malignant.

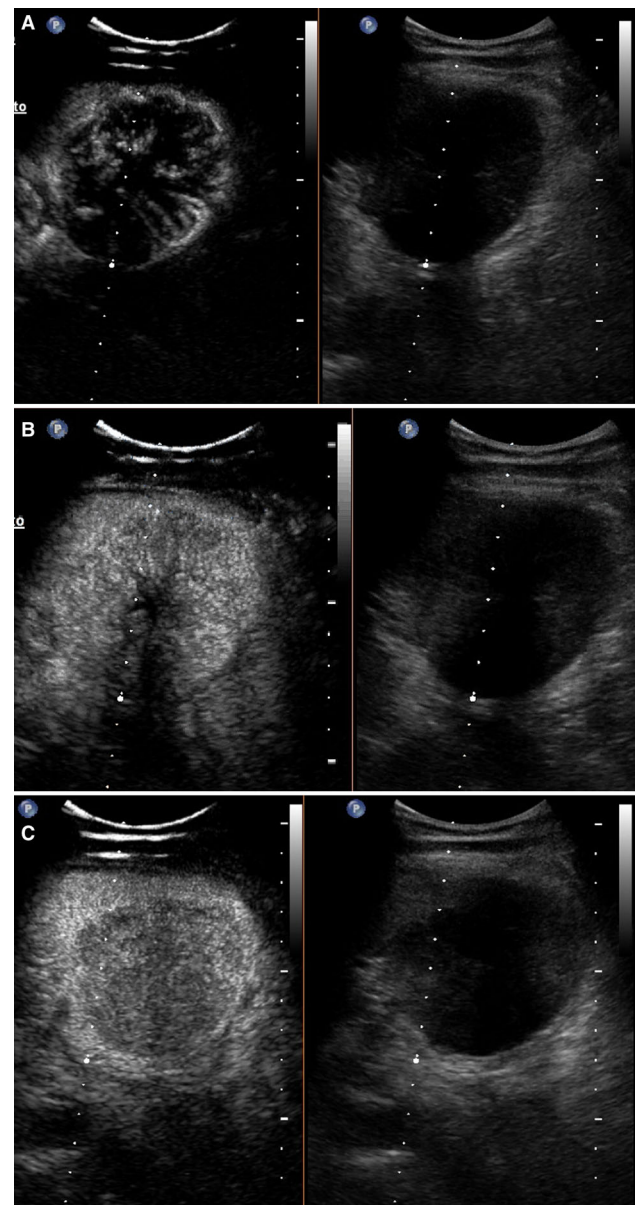


Fig. 3 Contrast sonography (CEUS) of the spleen; longitudinal view. The images are displayed on a split screen: on the *left*, the CEUS, on the *right*, the grey-scale images. **a:** the very early arterial phase shows many arteries running in a straight line from the periphery to the centre with spoke-wheel pattern. **b:** the full arterial phase shows the mass evenly enhanced. **c:** the venous phase shows the mass slightly hypoechoic in comparison with the parenchyma of the spleen

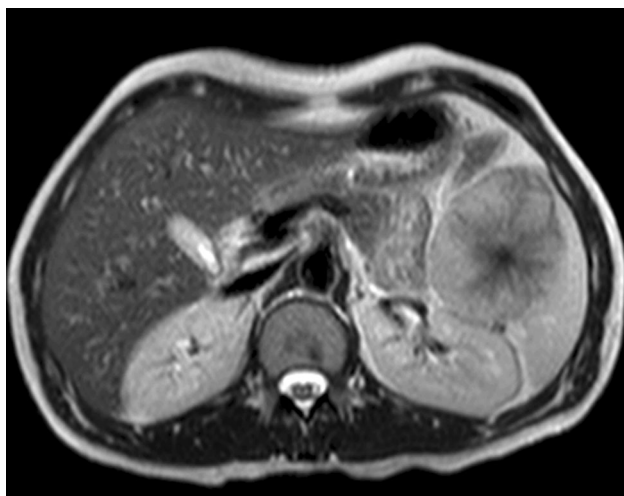


Fig. 4 Magnetic resonance of the abdomen on T2-weighted images. A single lesion of the spleen with spoke-wheel appearance is seen



Fig. 5 Gross appearance of the splenic mass. The cut surface shows the fibrotic stroma with spoke-wheel appearance

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Conflict of interest The authors declare that they have no conflict of interest.

Ethical standard All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. The patient provided written informed consent to enrolment in the study and to the inclusion in this article of information that could potentially lead to their identification.

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