Contrast-enhanced ultrasound (CEUS) appearance of hepatic myelolipoma

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Abstract The case report is a description of a single case of hepatic myelolipoma, a very rare benign hepatic tumor, evaluated with contrast sonography, in a 72-year-old female. It was previously reported as hyperechoic lesions at sonography. CEUS features of the lesion were: homogeneous hyperenhancement in the arterial phase and a slight hyperenhancement in the portal venous phase typical of benign tumors. The case report shows CEUS may help in differential diagnosis between benign and malignant lesions, but only the biopsy of the tumor and the pathological evaluation allows the diagnosis.

Keywords Myelolipoma · Liver · Contrast · Ultrasound

Sommario Presentiamo la descrizione di un singolo caso di mielolipoma epatico, tumore benigno molto raro, studiato con mezzo di contrasto ecografico (CEUS) in una donna di 72 anni. Precedentemente la lesione era stata descritta ecograficamente come nodulo iperecogeno. Le

caratteristiche CEUS erano quelle di una lesione con enhancement in fase arteriosa e debole enhancement in fase portale, caratteristiche tipiche di una lesione benigna. Il caso in esame mostra come la CEUS possa quindi aiutare nella diagnosi differenziale tra lesioni benigne e maligne, ma solo la biopsia del tumore e la valutazione patologica permettono la diagnosi finale.

Introduction

Myelolipoma is a benign tumor composed of fat and bone marrow components. It is more frequently located in the adrenal cortex [1]. Indeed, myelolipoma of the liver is a very rare tumor; only a few cases are reported in the literature and they are individual case reports [2–4].

Case history

We report the case of an otherwise healthy 72-year-old female who has been evaluated for 3 years in another institution before coming at our evaluation for the follow up of a focal liver lesion incidentally identified. The patient had no symptoms related to the tumor.

Indeed, the patient initially underwent a gray-scale abdominal sonography for dyspepsia and a small hyperechoic tumor was detected in the right liver lobe.

The computed tomography confirmed a 20-mm-diameter tumor of the right liver lobe. The tumor resulted hypodense after administration of intravenous contrast (Fig. 1). After about 2 years, the computed tomography showed an increase of the diameter of the tumor from 20 to 30 mm (Fig. 2). The patient was then also investigated with a

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Fig. 1 Computed tomography of the liver after the administration of intravenous contrast (venous phase). A solid hypodense tumor with a diameter of 2 cm is seen in the right lobe

Fig. 3 Magnetic resonance of the abdomen. Fat saturation imaging with suppression of the signal from adipose tissue. A single hypointense lesion of the right liver is seen

Fig. 2 Computed tomography of the liver after the administration of intravenous contrast (venous phase). After 2 years from the initial evaluation the diameter of the tumor is increased to about 3 cm

magnetic resonance; the fat saturation imaging, with suppression of the signal from adipose tissue, confirmed the tumor of the right lobe of the liver with an abundant fatty component (Fig. 3).

After 6 months, the patient was evaluated at our department and the tumor showed a further increase in diameter. Indeed, the gray-scale sonography confirmed a single hyperechoic focal lesion in the right lobe of the liver,

Fig. 4 Gray-scale sonography of the right lobe of the liver. An hyperechoic tumor, 35 mm in diameter, with well-defined margin is shown between the calipers

Fig. 5 Color sonography of the hepatic mass. Vessels are identified inside the tumor

now measuring 35 mm in diameter, with well-defined border (Fig. 4). The color sonography of the tumor revealed the presence of intranodular vessels (Fig. 5).

On contrast-enhanced ultrasound (CEUS), after the injection of 2.4 ml contrast medium (SonoVue®, Bracco, Milan, Italy), the tumor resulted homogeneously hyperenhanced in the arterial phase (Fig. 6a) and slightly hyper-echoic in the portal venous phase in comparison with the surrounding parenchyma (Fig. 6b).

Since the tumor had demonstrated an increase in diameter, the patient underwent a sonographically guided biopsy. An automated 21 gauge device was used for the biopsy.

Microscopically, the tumor was composed of adipose tissue and hematopoietic elements containing erythroid, megakaryocytes and myeloid colonies, allowing the diagnosis of myelolipoma (Fig. 7).

A Philips iU22 ultrasound machine (Philips Healthcare, Best, The Netherlands) with a 2- to 5-MHz convex probe and with a contrast harmonic imaging technology was used for our sonographic examinations.

The patient gave informed written consent for all imaging examinations and for the biopsy.

Conclusions

Myelolipoma of the liver is a very rare benign tumor. It was previously reported as hyperechoic lesions at sonography [2, 3]. This is the first case reporting the CEUS features of hepatic myelolipoma in the literature. CEUS features, namely a homogeneous hyperenhancement in the arterial phase and a slight hyperenhancement in the portal venous phase, are typical of benign tumors. Focal nodular hyperplasia and high-flow hemangiomas may show this pattern of enhancement [5]. Therefore, the CEUS features of hepatic myelolipoma in this single case resulted attributable to a benign nodule and it should be considered in the differential diagnosis with other benign tumors. Only the biopsy of the tumor and the pathological evaluation allowed the diagnosis.

Fig. 6 Contrast-enhanced ultrasound (CEUS) of the liver. The images are displayed on a split screen: on the left the CEUS, on the right the gray-scale images. **a** the arterial phase (20 s after the contrast medium injection) shows the mass evenly enhanced. **b** the portal venous phase (beyond 1 min after the contrast medium injection) shows the mass slightly hyperechoic in comparison with the parenchyma of the liver

Fig. 7 Pathologic examination of the biopsy. Hematoxylin–eosin stain. Magnification $\times 20$. Erythroid, megakaryocytes and myeloid colonies are identifiable among fat cells

Conflict of interest Guido Menozzi, Valeria Maccabruni, Giulia Marini, Elisabetta Froio and Elisa Garlassi declare that they have no conflict of interest.

Informed consent 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. All patients provided written informed consent to enrollment in the study and to the inclusion in this article of information that could potentially lead to their identification.

Ethical standard The study was conducted in accordance with all institutional and national guidelines for the care and use of laboratory animals.

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