Liver lesion characterization: the wrong choice of contrast agent can mislead the diagnosis of hemangioma

Letters

Liver Lesion Characterization: The Wrong Choice of Contrast Agent Can Mislead the Diagnosis of Hemangioma

Over the past few years, abdominal radiology experts studying the liver have increased the usage of liver-specific gadolinium-chelate contrast agents. These agents are gadobenate dimeglumine (MultiHance, Bracco) and gadoxetate (Primovist, Bayer HealthCare), with different biliary rate excretion (5% and 50%) and liver-specific phase acquisition time (120 and 20 minutes), respectively.

This great difference in biliary clearance requires the radiologist's consideration, especially in the study of focal lesions. In fact, with Primovist, the equilibrium phase (180 seconds) is an early-uptake stage because of the quick accumulation of the contrast agent in hepatic cells. Therefore, we must consider a false washout at the equilibrium phase, in which Primovist is retained in the hemangioma, which nonetheless appears iso- or hypointense on T1-weighted images because of the increasing signal intensity of the surrounding healthy hepatic parenchyma. This implies that hemangiomas may have a misleading contrast imaging pattern with Primovist, without the usual, well-demonstrable fill in, as assessed by Gupta et al. [1] who showed the different contrast imaging pattern of hemangiomas with Primovist and MultiHance.

This nontypical pattern of hemangiomas with Primovist does not represent a significant problem in detecting large masses, which are already well recognizable on unenhanced acquisitions. However, it can be difficult to properly characterize small lesions that may not be benign [2]. In particular, it can be complicated when we observe small multiple hemangiomas—sometimes with a prevalent fibrous component and relatively low signal intensity in heavily T2-weighted acquisitions—that have not been documented in previous examinations or, as often occurs in daily practice, in patients lacking an accurate clinical history or previous examination (e.g., occasional hepatic lesion seen on an ultrasound examination) (Fig. 1).

These problems can be amplified if, to optimize examination time, the radiologist chooses to apply the Primovist inverse study protocol, in which only the T1-weighted sequences are acquired before the dynamic phase, and T2-weighted and diffusion-weighted sequences are acquired in the contrast-enhanced phase before the hepatobiliary phase is acquired. Such an inverse modality is based on studies that have highlighted that Primovist does not influence the T2-weighted and diffusion-weighted sequences, and our experience confirms these data [3].

Of course, the saving in time is relevant, but the risk of selecting an unsuitable contrast agent is increased. On the basis of these considerations, to avoid the risk of making mistakes or at least to deal with divergent patterns in patients without a clinical history or with a suspicion of hemangioma, we prefer the use of MultiHance, which can act as a non–liver-specific gadolinium chelate (with an appropriate dynamic phase) and, if necessary, make it possible to acquire a hepatobiliary phase.

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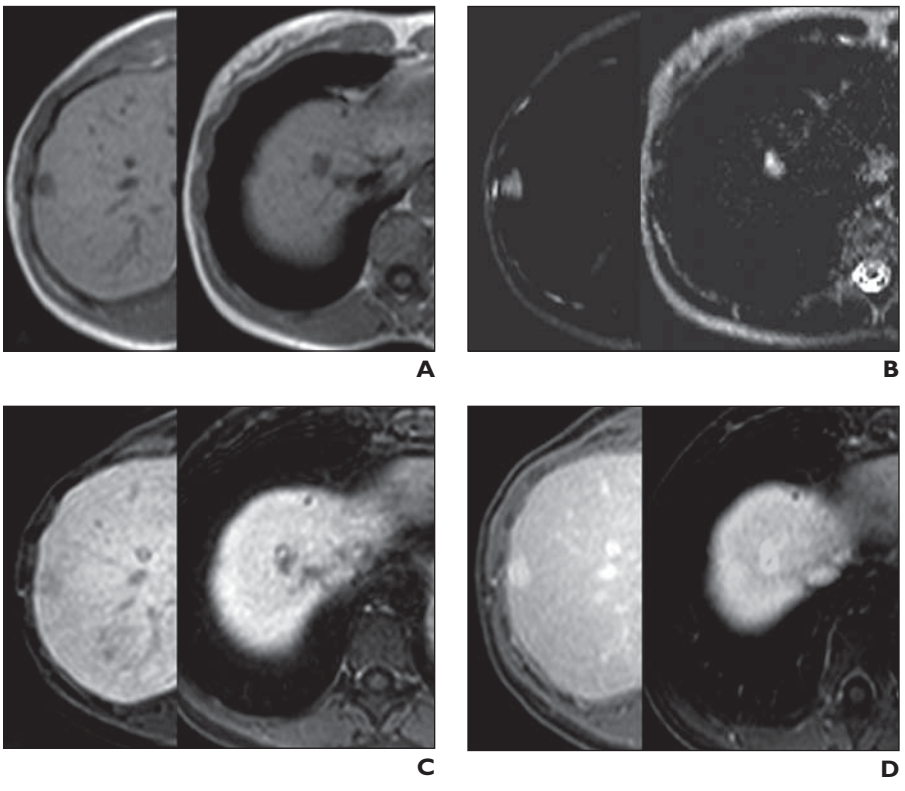

Fig. 1—44-year-old woman with no history of malignancy who presented with multiple small hepatic lesions. **A** and **B,** T1-weighted images (**A**) show two small hypointense lesions that appear hyperintense on T2-weighted images (**B**) with TE of 320 ms.
C and **D,** T1-weighted images obtained 3 minutes after administration of gadoxetate (**C**) and T1-weighted images obtained 3 minutes after injection of gadobenate dimeglumine (**D**). In case of small angiomas, as in this patient, use of gadoxetate can confuse, causing diagnosis of malignancy.

References

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