



The “enlarged hilar periportal space sign” in liver cirrhosis

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The “enlarged hilar periportal space sign” seen on axial computed tomography (CT) and magnetic resonance (MR) images is a typical finding in patients with liver cirrhosis [1, 2]. In healthy patients, the anterior space of the right portal vein (hilar periportal space) is narrow, containing minimal fatty tissue (Fig. 1a). In patients with early cirrhosis, the hilar periportal space is enlarged and filled with an

increased volume of fat, which is a consequence of atrophy of the medial segment (segment IV) of the left liver [1–4] (Fig. 1b). The exact mechanism of atrophy of the IV segment is not understood fully [3]. However, the most likely cause of this atrophy may be portal venous hypoperfusion based on anatomical variations in blood supply (containing trophic factors) to this segment in liver cirrhosis [1, 2].

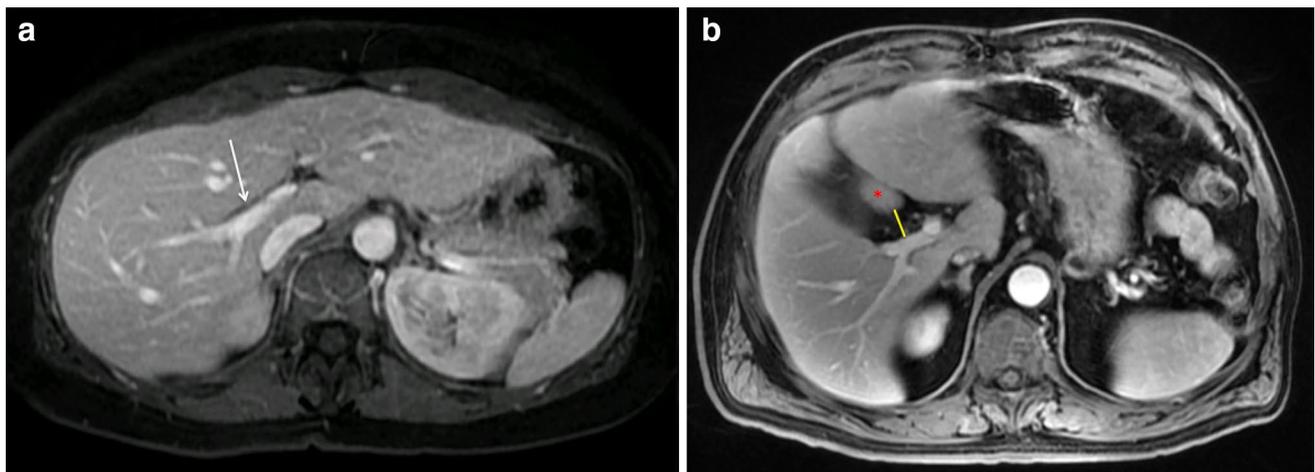


Fig. 1 Axial MR images on portal phase showing, respectively, a normal and narrow hilar periportal space (white arrow) in healthy patient (a) and an “enlarged hilar periportal space” (17 mm; yellow line) in

patient with cirrhosis (b). Notice the atrophy of the segment IV in cirrhotic liver (red asterisk)

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Indeed, the portal branches to the segment IV, which arise from the right side of the left portal vein, receive less blood than the veins to the other segments because of the presence of hepatofugal flow [1, 2]. A cutoff value of 10 mm (defined as a distance between the right portal vein and the posterior edge of segment IV) had a sensitivity of 93%, a specificity of 92%, an accuracy of 92%, and a positive predictive value of 91% for a diagnosis of early cirrhosis [1, 3]. The hilar periportal space is therefore deemed enlarged if the distance is greater than 10 mm.

Other hepatic morphological abnormalities are seen commonly on CT or MRI performed in patients with chronic liver disease, including irregular hepatic margins, increased caudate/right lobe ratio, atrophy of the posterior segments of the right liver lobe and medial segments of the left liver, hypertrophy of the lateral segments of the left liver and caudate lobe, the expanded gallbladder fossa sign, the notch sign, and confluent hepatic fibrosis [3, 4]. Importantly, recognizing the hepatic morphological changes in images can help radiologists to diagnose cirrhosis in early stages and to differentiate cirrhosis from other liver disease that can mimic it. CT and MR imaging depiction of an enlarged hilar periportal space has considerable importance in the detection of the early stages of cirrhotic disease in patients who do not have conventional signs of cirrhosis, thus allowing early intervention and prompt disease management.

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Compliance with ethical standards

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

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent Statement of informed consent was not applicable since the manuscript does not contain any patient data.

References

1. Ito K, Mitchell DG, Gabata T (2000) Enlargement of hilar periportal space: a sign of early cirrhosis at MR imaging. *J Magn Reson Imaging* 11(2):136-40. PubMed PMID: 10713945
2. Tan KC (2008) Enlargement of the hilar periportal space. *Radiology* Aug;248(2):699-700. <https://doi.org/10.1148/radiol.2482060463>. PubMed PMID:18641259
3. Mamone G, Cortis K, Sarah A, Caruso S, Miraglia R (2018) Hepatic morphology abnormalities: beyond cirrhosis. *Abdom Radiol (NY)* Jul;43(7):1612-1626. <https://doi.org/10.1007/s00261-017-1351-9>. Review. PubMed PMID: 29043403
4. Brancatelli G, Federle MP, Ambrosini R, Lagalla R, Carriero A, Midiri M, Vilgrain V (2007) Cirrhosis: CT and MR imaging evaluation. *Eur J Radiol* Jan;61(1):57-69. Epub 2006 Dec 4. Review. PubMed PMID:17145154