Uncommon MR Appearances of Common Hepatic and Splenic Pathologies

Andrew Holden

1Auckland City Hospital, Auckland, New Zealand

Failure to recognise uncommon appearances of common hepato-splenic pathologies represents the most frequent error seen in MR cases referred to a tertiary institution for second opinions. These lesions are much more frequent and important than rare hepato-splenic pathologies. Common hepatic pathologies with unusual appearances include hepatic haemangioma, focal nodular hyperplasia and hepatic adenoma. Haemangioma, hamartoma and accessory splenic tissue represent common splenic pathologies that may be incorrectly diagnosed.

Hepatic cavernous haemangioma (CH) can be diagnosed with > 97% specificity if it demonstrates typical MR appearances including non-contrast T1 and T2 features and “Type 2” enhancement – initial peripheral globular enhancement with progressive centripetal enhancement on delayed imaging. The appearances in the hepatobiliary phase (HBP) vary with timing of the HBP. Atypical appearances for CH include “Type 1” enhancement, luxury perfusion, cavernous haemangioma in a cirrhotic liver and giant cavernous haemangioma.

Focal nodular hyperplasia (FNH) is the second commonest benign hepatic tumour behind CH. FNH can be diagnosed with 98% specificity if a “full house” of MR appearances are present including non-contrast T1 and T2 features (near iso-intensity with adjacent liver parenchyma), uniform arterial phase enhancement, near iso-intensity in portal venous and more delayed phases, T2 bright and delayed enhancing central scar. Specificity approaches 100% when the lesion is hyperintense in the HBP. Typical FNH appearances include large (>5cm) FNH, absent, multiple or eccentric central scars, inhomogeneous or minimal arterial phase enhancement, presence of a pseudo-capsule and T1 hyperintensity.

Hepatocellular adenoma (HA) is a far less common liver lesion than FNH and CH. Although the presence of haemorrhage, a capsule and heterogeneous arterial phase enhancement should suggest HA, in a number of cases appearances resemble FNH on routine MRI. To improve differentiation from FNH, two additional imaging features should be looked for – signal loss on opposed phase T1 indicating intra-cytoplasmic lipid in the important sub-type associated with the highest risk of malignant transformation and signal loss in the hepatobiliary phase.
Splenic haemangioma is far less common than CH but is still the most common benign splenic neoplasm. As in the liver, these lesions are circumscribed and T2 bright. Most small haemangiomas are solid, demonstrate type 1 enhancement and may be capillary or cavernous. Larger lesions are usually cavernous and may be solid or cystic. Because of an absence of dual blood supply, these lesions tend to show a different pattern of enhancement to type 2 liver enhancement – irregular rather than globular and progressive on delayed images rather than centripetal. Splenic hamartomas are usually solitary solid lesions. Unlike haemangioma, these lesions may be T1 bright, show less T2 brightening and uniform early enhancement. Accessory splenic tissue can be specifically diagnosed with SPIO-enhanced MRI.

References