

Tissue characterization with MRI in the liver: usefulness in diffuse and tumorous lesions

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Diffuse liver diseases such as iron overload, fatty infiltration and fibrosis can be detected and quantified with MRI. Hemochromatosis causes T_2^* shortening that correlates with the amount of iron within the liver (1). Fatty infiltration can be graded by assessing the signal intensity decrease on opposed-phase gradient-echo images. Liver cirrhosis is often detected with conventional MRI. However, this method cannot detect earlier stages of liver fibrosis. In contrast, fibrosis can be assessed according to the Metavir grading system with three-dimensional MR elastography (2). Three-dimensional MR elastography has the potential to overcome some of the limitations of ultrasound elastography (Fibroscan) and may become especially important to decide which patients should be treated with antiviral or new antifibrotic treatments.

In focal liver diseases, MRI has a major role in the detection and characterization of benign and malignant liver tumours. Moreover, perfusion MRI and diffusion MRI are increasingly used to assess liver lesions (3). These functional methods appear particularly useful to evaluate the early response of malignant tumours to new treatments, including anti-angiogenic drugs (4).

In conclusion, non-invasive detection, characterization and grading of an increasing number of diffuse and focal liver lesions can be performed with morphologic, quantitative, and functional MRI. These non-invasive methods can be repeatedly used in patients with liver diseases, limiting the need for biopsy.

References

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