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ABDOMINAL IMAGING

LETTER TO THE EDITOR

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Letter to the Editor: On the clinical applicability of multiparametric and multimodal approaches in the evaluation of focal liver lesions

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Dear Editor,

I read with great interest the study by Jabiyev et al.,[1] in which they evaluated the role of multiparametric magnetic resonance imaging (mpMRI), diffusion-weighted imaging (DWI), and magnetic resonance elastography (MRE) in differentiating benign from malignant liver lesions. I congratulate the authors on this valuable technical assessment.

However, although the term "multiparametric" is used in the title and throughout the text, I note that the parameters examined [apparent diffusion coefficient (ADC), stiffness, and T1/T2 mapping] were analyzed primarily as individual variables rather than within an integrated diagnostic model—for example, through logistic regression or a combined scoring system.[1-3] A truly multiparametric approach should demonstrate how the combination of different biophysical parameters guides patient management more reliably than single parameters. The authors implicitly acknowledge this limitation, stating that the contribution of the combined application remains a goal for future studies.[1]

At this point, I believe that the concept of multimodality should not be limited solely to MRI sequences. The fact that MRE still requires specialized equipment in many centers necessitates the integration of more accessible methods.[3] Current literature suggests that multimodal integration of ultrasound (US) and MRI data may provide a more holistic success in revealing both vascular and parenchymal phenotypes of lesions.[2,4] For instance, novel super-resolution US (SR-US) techniques can analyze microvascular architecture—vessel density, fractal dimension, and flow direction entropy—at the 128-micrometer level.[2] Combining such microvascular data with MRI findings such as ADC and stiffness into a single algorithm holds the potential to minimize the need for biopsy, especially in cases with atypical enhancement or overlapping quantitative values.[2,5]

I propose that future research should focus on multimodal algorithms strengthened by artificial intelligence-supported radiomic analyses. Three main approaches stand out.

The first approach involves screening models combining grayscale US and Doppler data with non-contrast MRI findings (DWI/ADC). Such an approach may not completely replace contrast-enhanced imaging for definitive subtype characterization, but it could carry significant clinical value in first-line differential diagnosis and when contrast use is contraindicated.

The second utilizes hybrid approaches simultaneously evaluating microbubble-based vascular mapping—contrast-enhanced US and SR-US—with MRI tissue characterization (stiffness/ADC).[2]

The third approach consists of high-resolution integrated models incorporating all contrast-enhanced and advanced sequences (mapping/elastography) of both US and MRI.[1,4]

In conclusion, the study by Jabiyev et al.[1] successfully demonstrates the effectiveness of mpMRI, DWI, and MRE in evaluating focal liver lesions. However, further prospective, multicenter studies with large patient series, based on the combined use of parameters and modalities, are indispensable for the true integration of these techniques into clinical practice.

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Footnotes

Conflict of interest disclosure

The author declared no conflicts of interest.

References

1. Jabiyev A, Karçaaltıncaba M, Karaosmanoğlu AD, Akata D, Özmen MN, İdilman İS. Multiparametric magnetic resonance imaging, diffusion-weighted magnetic resonance imaging, and magnetic resonance elastography: differentiating benign and malignant liver lesions. *Diagn Interv Radiol*. 2026;32(2):133-138. [Crossref]
2. Couture O, Hingot V, Heiles B, Muleki-Seya P, Tanter M. Ultrasound localization microscopy and super-resolution: a state of the art. *IEEE Trans Ultrason Ferroelectr Freq Control*. 2018;65(8):1304-1320. [Crossref]
3. Idilman IS, Li J, Yin M, Venkatesh SK. MR elastography of liver: current status and future perspectives. *Abdom Radiol (NY)*. 2020;45(11):3444-3462. [Crossref]
4. Banerjee R, Pavlides M, Tunnicliffe EM, et al. Multiparametric magnetic resonance for the non-invasive diagnosis of liver disease. *J Hepatol*. 2014;60(1):69-77. [Crossref]
5. Taouli B, Koh DM. Diffusion-weighted MR imaging of the liver. *Radiology*. 2010;254(1):47-66. [Crossref]