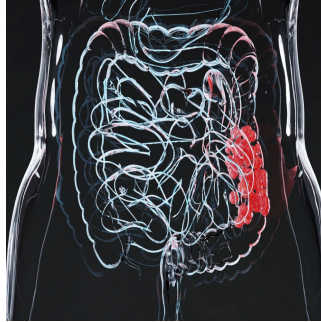


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## Comparing MRI Protocols for Colorectal Liver Metastases Detection



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Colorectal cancer remains a significant global health concern due to its high incidence and the considerable impact of liver metastases on patient survival rates. Effective detection and continuous monitoring of colorectal liver metastases (CRLM) are vital for planning treatment strategies and improving clinical outcomes. While traditional diagnostic tools like computed tomography (CT) and standard contrast-enhanced magnetic resonance imaging (MRI) have long been effective in diagnosing CRLM, they also present limitations, such as elevated costs, longer examination durations and risks linked to contrast media usage.

Advancements in MRI technology have introduced abbreviated MRI (Ab-MRI) protocols designed to reduce examination time and costs while maintaining diagnostic accuracy. A recent study published in *Insights into Imaging* compares the effectiveness of non-contrast abbreviated MRI (Ab-MRI 1) and gadoteric acid-enhanced abbreviated MRI (Ab-MRI 2) against the standard gadoteric acid-enhanced MRI protocol for CRLM detection.

### Comparing Non-Contrast and Gadoteric Acid-Enhanced MRI Protocols

The comparative study involved 94 patients, accounting for 422 lesions, both metastatic and benign. Each protocol was assessed using a standardised 5-point scoring system where higher scores corresponded to greater malignancy likelihood. The diagnostic accuracy, lesion size and clarity of imaging were all evaluated in detail.

Results indicated that both Ab-MRI 1 and Ab-MRI 2 protocols performed comparably with the standard MRI protocol regarding lesion detection accuracy. However, for lesions smaller than 10 mm, Ab-MRI 2 demonstrated slightly superior diagnostic performance, largely due to the hepatobiliary phase imaging included in this protocol, which aids in identifying smaller malignancies more effectively. Despite this advantage, Ab-MRI 1 was also highly effective, with only minor differences noted in certain cases.

### Cost and Efficiency Benefits of Abbreviated MRI Protocols

Abbreviated MRI protocols offer substantial advantages in terms of both cost and efficiency. The non-contrast Ab-MRI 1 protocol showed a 50% reduction in technical costs compared to the standard MRI, translating to an average saving of \$1472.35 per patient. Similarly, Ab-MRI 2 also yielded significant financial savings while ensuring diagnostic accuracy. Reducing the need for contrast agents contributes to lower expenses and greater accessibility in routine monitoring.

In addition to reduced costs, abbreviated MRI protocols also considerably shorten examination times. Ab-MRI 1 takes only 5-7 minutes compared to the standard protocol's 30-35 minutes, making it a convenient option for routine clinical surveillance. Furthermore, eliminating contrast agents from the non-contrast Ab-MRI 1 protocol minimises the risk of adverse reactions and potential gadolinium retention concerns, enhancing patient safety during repeated follow-ups. Shorter scanning durations may also reduce patient discomfort and facilitate higher throughput in busy medical facilities.

### Clinical Implications and Limitations

The findings underscore the suitability of non-contrast abbreviated MRI as a feasible alternative for CRLM surveillance, particularly for ongoing monitoring where frequent scans are required. However, certain limitations were noted. The non-contrast protocol exhibited slightly higher diagnostic uncertainty in detecting smaller lesions and in specific anatomical areas, such as near the diaphragm, where image artefacts can affect clarity. These artefacts can obscure lesions, particularly in challenging anatomical regions, which may limit accuracy in certain cases.

Given these limitations, non-contrast MRI may be best suited for follow-up surveillance rather than initial cancer staging, where more comprehensive lesion characterisation, especially for smaller lesions, may be necessary. Standard contrast-enhanced MRI remains more appropriate for initial staging due to its ability to provide more detailed imaging. However, for long-term monitoring, non-contrast Ab-MRI 1 offers a safer and more cost-effective alternative.

The comparative evaluation of non-contrast and gadoxetic acid-enhanced abbreviated MRI protocols for colorectal liver metastases detection highlights the effectiveness and cost-saving potential of these alternatives. Non-contrast Ab-MRI offers a promising, safer and cost-effective approach for regular CRLM surveillance, while Ab-MRI 2 remains highly effective for smaller lesion detection. Both protocols provide reliable options for routine follow-up and can be used strategically depending on the clinical context and patient needs. Further prospective studies with larger patient cohorts will be valuable in confirming these findings and refining their clinical applications.

**Source:** [Insights into Imaging](#)

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