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ICMRI 2026
THE 14th INTERNATIONAL CONGRESS ON MRI
& 31st ANNUAL SCIENTIFIC MEETING OF KSMRM

AUGUST 27 - 28, 2026
Grand Walkerhill Seoul, Seoul, Korea
https://icmri.ksmrm.org/2026m

Abdomen 1

SY21-1

Clinical Spectrum MASLD & MASH: Imaging Implications for Radiologists

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Metabolic dysfunction–associated steatotic liver disease (MASLD) is now recognized as one of the most common chronic liver diseases worldwide and encompasses a broad clinical and pathologic spectrum, ranging from simple steatosis to metabolic dysfunction–associated steatohepatitis (MASH), advanced fibrosis, cirrhosis, and liver-related complications. Because disease progression is largely driven by hepatic inflammation and fibrosis, accurate assessment of steatosis, inflammatory activity, and fibrosis is essential for risk stratification, clinical management, and therapeutic decision-making.

This presentation will provide an overview of the concept and spectrum of MASLD, followed by a focused discussion on imaging-based evaluation of this disease entity. For hepatic steatosis, ultrasound-based attenuation techniques, particularly controlled attenuation parameter obtained from transient elastography, are widely used in clinical practice and clinical trials. MRI-based proton density fat fraction provides more accurate and reproducible quantification of liver fat and is increasingly regarded as a non-invasive reference standard for steatosis assessment. For liver fibrosis, non-invasive strategies combining blood-based markers and imaging techniques are increasingly recommended. FIB-4 is commonly used as an initial screening tool, followed by transient elastography in selected patients. MR elastography provides the highest diagnostic accuracy among currently available non-invasive methods and serves as an important problem-solving tool, particularly when precise fibrosis staging is required.

The role of imaging in MASH clinical trials will also be discussed. Although non-invasive imaging tests such as transient elastography with CAP and MRI-PDFF are widely used for screening, liver biopsy remains essential for final study enrollment and histologic outcome assessment in many pivotal trials.

Overall, radiologists need to understand the evolving clinical spectrum of MASLD and the complementary roles of ultrasound, MRI-PDFF, and MR elastography in non-invasive disease assessment.

Keywords: *MASLD, MASH, Transient elastography, MRI-PDFF, MR elastography*