Improving Assessment of Steatotic Liver Disease with Non-invasive Ultrasound-based Technique

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A Call to Arms

WHO, EASL, AASLD, and APASL are among the 17 organisations calling for global action on SLD,[1] a leading cause of liver-related morbidity and mortality[2]

Early detection and management of MASLD can prevent progression to MASH, resulting in:

- Better outcomes: **~10–25%** of patients with MASH may develop advanced fibrosis and cirrhosis[3]
- Lower health and societal costs: In Europe, MASH was responsible for **up to €1,292 million** of healthcare costs and €41,536 to €90,379 million of DALY-related wellbeing costs in 2018[4,7]

Main risk factors:[5]

- Obesity
- Type 2 diabetes

SLD is the new nomenclature for the metabolic-associated fatty liver disease spectrum, including:[2]

MASLD, formerly NAFLD[2]	MASH, formerly NASH[2]
Caused by a build-up of fat in the liver[6]	The most severe form of MASLD[8]
Usually asymptomatic[5]	Can lead to cirrhosis, liver failure, and liver cancer[9]
Affects more than **one-third** of adults, and more than one in 10 children[1]	**Over 16%** of people with MASLD have MASH[10]
Global prevalence increased by **50%** between 1991–2019[7]	

Ultrasound-Guided Attenuation Parameter (UGAP)

Non-invasive quantifiable image guided techniques expand adoption of ultrasound

GE HealthCare's UGAP solution, on the LOGIQ™ ultrasound portfolio:

1. Automated measurement algorithm for optimum measurement range[14]
2. Guided image acquisition for quantifiable, repeatable results
3. Proven intra/interobserver reliability independent of:
   - breathing manipulations[15]
   - patient positioning[15]
   - patient diet status[15]
4. Recommended quick acquisition protocols for:
   - large-scale use
   - reproducible results, even for non-ultrasound experts, including nurses and technicians
5. Well correlated to MRI-PDFF,[13] with proven cut-off values[16]

The Assessment Pathway

Liver biopsy remains the gold standard for detecting SLD,[11] but:

- it is invasive[11]
- there is inter/intraobserver variability[11]

MRI-PDFF is a non-invasive technique to accurately evaluate liver fat fraction,[6] but:

- it is expensive[6]
- there is limited access[6]

Traditional B-mode ultrasound:

- low sensitivity in patients who are severely obese[12]
- requires specialist sonographer expertise[13]
- intraobserver subjectivity

UGAP is well correlated to MRI-PDFF[13]

- cheaper and more accessible than MRI[6]
- provides staging information to guide management[6]

Key Takeaways

- MASLD is a global health emergency. Early diagnosis is key to preventing progression to MASH
- Liver biopsy is invasive and unfeasible for large-scale screening
- MRI-PDFF is well correlated with biopsy but not suitable for screening at-risk patients or monitoring therapy
- Ultrasound is dependent on user expertise, and is less sensitive and more subjective than MRI-PDFF
- UGAP is well correlated to MRI-PDFF. It offers. easy, quick, and repeatable quantitative measurement of steatosis
- UGAP benefits both clinicians and patients, as it allows for early detection of MASLD, contributing to the more effective management of SLD

Abbreviations:

AASLD: American Association for the Study of Liver Diseases; APASL: Asian Pacific Association for the Study of the Liver; DALY: disability-adjusted life year; EASL: European Association for the Study of the Liver; MASH: metabolic dysfunction-associated steatohepatitis; MASLD: metabolic dysfunction-associated steatotic liver disease; MRI-PDFF: magnetic resonance imaging proton density fat fraction; NAFLD: non-alcoholic fatty liver disease; NASH: non-alcohol steatohepatitis; SLD: steatotic liver disease; UGAP: ultrasound-guided attenuation parameter; WHO: World Health Organization.

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