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The Future of Liver Elastography in the Field of Hepatology

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Ultrasound-based liver elastography is being increasingly used in clinical practice to help clinicians assess prognosis and recommend the most appropriate treatment in hepatology patients. In coming years liver elastography will probably be increasingly used as part of "point of care" ultrasonography.

More than 10 years ago, the first papers on liver elastography were published, showing its good results. The first publications were European followed by Asian ones, and were focused especially on transient elastography (TE). They compared TE to liver biopsy which was, and still is, considered to be the “gold standard” of liver evaluation. During that time, the treatment of chronic hepatitis was limited to drugs with rather poor results (especially pegylated interferon). Decision for treatment was based in the vast majority of cases on liver biopsy. New, very potent drugs became available in recent years for viral chronic hepatitis: direct acting agents (interferon-free treatment) for chronic hepatitis C or nucleoside/nucleotide analogs (for chronic hepatitis B).

The question that arises now is whether it is necessary to perform a liver biopsy before treatment. Almost all patients that are treated will be healed or will become aviremic, with no regard to liver fibrosis severity.

The perspective regarding the assessment of liver fibrosis severity has changed in modern hepatology: from liver biopsy in all cases, to only a limited number of biopsies in unclear cases. Ultrasound-based elastographic methods or biological tests (simple or complex) are used to assess fibrosis before and after treatment [1]. This strategy started in Europe, but very recently, with the FDA approval of elastographic systems, it began to be used also in the USA.

Another question that arises is when to perform liver biopsy in daily practice. For many clinicians (and the number is increasing) the answer is: when something is unclear. What does unclear mean when referring to noninvasive techniques to evaluate liver fibrosis severity: Mainly discordant results between biological and elastographic methods. Another situation in which liver biopsy is recommended is special cases of autoimmune hepatitis, non-alcoholic liver diseases, etc.

Biological tests can provide information regarding the severity of fibrosis, activity/and or steatosis. By combining ultrasound evaluation with liver elastography, we can obtain information regarding steatosis severity and regarding liver stiffness as a marker of fibrosis stage. How is a decision between biological tests and elastography made? This probably depends on the local expertise, the availability of ultrasound machines able to perform elastography, and on the local cost of the available methods.

At present, there are many ultrasound systems that can perform liver elastography. Ultrasound-based elastography techniques can be divided into shear wave elastography (SWE) [transient elastography (TE), point SWE and 2-dimensional SWE (2D-SWE)] and strain elastography [2, 3]. SWE methods are probably currently ready to be used in clinical practice [4–6].

On the other hand, magnetic resonance elastography (MRE) is strongly promoted by radiologists from the USA. As a result of the very good results of this method, it will soon be used in daily practice (at least in the USA). How is a selection between ultrasound-based elastography and MRE made? The cost will probably be the deciding factor. For clinicians using an ultrasound machine that is modern enough to have an SWE module, they will always use ultrasound-based elastography. With this technique, answers regarding steatosis (at least moderate and severe) and liver stiffness can be obtained in less than 5 min. For radiologists it will probably be more difficult to decide between MRE and ultrasound-based elastography. However, for hepatologists using ultrasound and having modern machines (with SWE), the choice is not difficult at all. They will use ultrasound waves.

What is the advantage of this strategy? The advantage is “point of care” diagnosis. The patient comes with a problem (such as “is my liver severely damaged?”) and receives an answer in only a few minutes with sufficiently accurate staging of his/her liver disease. Don’t forget that if a mass is discovered in the liver by ultrasound examination, contrast-enhanced ultrasound (CEUS) will be able to provide a diagnosis with high probability.

Thus, with respect to the future of liver elastography, I believe that very soon every hepatologist will perform clinical ultrasound for his/her patients (assessing steatosis, liver structure, liver surface, signs of portal hypertension, ascites, masses, etc.), followed by SWE for the evaluation of liver stiffness as a marker of fibrosis severity. If a mass is discovered, a CEUS evaluation can be performed in the same session.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

[1] EASL Recommendations on Treatment of Hepatitis C 2015. J Hepatol 2015 63: 199–236

[2] Bamber J, Cosgrove D, Dietrich CF et al. EFSUMB guidelines and recommendations on the clinical use of ultrasound elastography. Part 1: Basic principles and technology. Ultraschall in Med 2013; 34: 169–184

[3] Shiina T, Nightingale KR, Palmeri ML et al. WFUMB guidelines and recommendations for clinical use of ultrasound elastography: Part 1: basic principles and terminology. Ultrasound Med Biol 2015; 41: 1126–1147

[4] Cosgrove D, Piscaglia F, Bamber J et al. EFSUMB guidelines and recommendations on the clinical use of ultrasound elastography. Part 2: Clinical applications. Ultraschall in Med 2013; 34: 238–253

[5] Ferraioli G, Filice C, Castera L et al. WFUMB guidelines and recommendations for clinical use of ultrasound elastography: Part 3: Liver. Ultrasound Med Biol 2015; 41: 1161–1179

[6] EASL-ALEH Clinical Practice Guidelines: Non-invasive tests for evaluation of liver disease severity and prognosis. J Hepatol 2015; 63: 237–264Ioan Sporea