Austin Journal of Radiology

Open Access

Austin Publishing Group

Editorial

The New Era for Liver Fibrosis: The Non Invasive Assessment in Hepatitis C Virus Infected Patients

Stasi Cristina*
Department of Experimental and Clinical Medicine, University of Florence, Italy

***Corresponding author:** Cristina Stasi, Interdepartmental Centre MASVE, Department of Experimental and Clinical Medicine, University of Florence, Largo Brambilla 3, 50134 Florence, Italy

Received: January 07, 2015; **Accepted:** January 07, 2015; **Published:** January 08, 2015

Editorial

The term "elastography" refers to a variety of techniques able to characterize the response and mechanical properties of tissues using non-invasive methods. Hepatic elastography has been shown to be an effective technique for diagnosing of severe fibrosis and for excluding a significant fibrosis. It may be used as a "diagnostic discriminator" to establish clinical priorities and reduce the number of liver biopsies [1].

New treatments for HCV infection require an accurate assessment of liver fibrosis for a correct therapeutic approach. The assessment of liver stiffness by Transient Elastography (TE) is a good option to evaluate liver fibrosis by non invasive method for accurate selection of patients' treatment. Its accuracy for the diagnosis of liver fibrosis largely depends on the choice of correct cut-offs values. Recently, Ferraioli et al [2]. Compared results of liver stiffness measurement obtained in 246 patients (79.3% HCV) with those of a recent meta-analysis by Tsochatzis et al [3]. The cut-offs of the single centre study by Ferraioli et al [2]. were comparable to those obtained in the meta-analysis that included 40 studies. In this meta-analysis the cut-offs values for chronic HCV infection were 7.6 (range 5.1–10.1), 10.9 (8.0–15.4), and 15.3 (11.9–26.5) kPa for F = 2, 3, and 4, respectively.

The meal can affect the reliability of stiffness values in the diagnosis of fibrosis stage in patients with chronic HCV infection [5, 4]. A recent study [5] suggests that should be observed a fasting period of 120 min before liver stiffness measurements. In this study liver stiffness was performed in 125 consecutive patients with chronic HCV infection in different stages of fibrotic evolution. Stiffness values were measured at different time point after a standardized liquid meal. A peak in the increase of stiffness values were observed between 15-45 minutes after the start of the meal with a return to pre-meal baseline values within 120 minutes in all patients. Several studies [6-11] have evaluated the utility of TE for the assessment of short- and long-term longitudinal changes in liver fibrosis before, during, and after antiviral treatment in patients with chronic HCV infection. The results of these studies show that this technique may detect changes of liver fibrosis during treatment thus may be useful for the clinical management of chronic liver disease. Moreover, Stasi et al. [11,12] showed that high liver stiffness values may also be considered as a negative predictive value of response to treatment. In these studies [11,12], patients with stiffness values greater than 12 kPa had a significant lower response to antiviral therapy, suggesting that measurement of liver stiffness could be considered together with other predictors of response when considering treatment [11,13]. The assessment of liver stiffness in patients with HCV-mixed cryoglobulinemia syndrome undergoing Rituximab treatment, in whom antiviral treatment was contraindicated or not tolerated, showed a reduction of liver stiffness, strictly associated with the B-cell depletion, at month 3 after therapy compared to baseline values. This data suggest a role of liver infiltrates and subsequent liver necro-inflammation, as already shown in previous study [14,15].

An international multicentre study [16] compared the accuracy of Acustic Radiation Force Impulse (ARFI) elastography in the detection of fibrosis in comparison with liver biopsy and TE. The results of this study showed that TE was more accurate for all stage of Fibrosis (F≥1) and cirrhosis, while the accuracy of ARFI and TE was similar when these were used to predict significant (F≥2) and severe fibrosis (F≥3).

The accuracy of abdominal ultrasound, computer tomography or MR imaging, in the diagnosis of liver fibrosis is limited. MR imaging cannot visualize the precirrhotic stage of liver fibrosis and the early cirrhosis. In these conditions, in MR imaging liver parenchyma appear normal. The assessment of liver fibrosis improves trough the administration of contrast agents. In particular, double contrast-enhanced MR imaging causes high image contrast between the low-signal-intensity fibrotic reticulations. However, the main limitation of this technique is the high cost and the inconvenience related with the use of two contrasts [17].

MR elastography is a new technique that quantifies stiffness of the liver with a sufficient repeatability [18,19] and high diagnostic accuracy for staging liver fibrosis. Ichikawa et al [20] compared the ability of MR elastography and serum fibrosis markers to discriminate different stages of fibrosis. They found that mean stiffness value of the liver increased as liver fibrosis stage progressed. In comparison with TE, the advantage of MR elastography is that this technique visualizes the whole liver and does not require a specific acoustic window. Its main limitations are the high cost and inconvenience associated with confounding factors such us hepatic inflammation [21], hepatic vascular congestion, cholestasis and portal hypertension [17]. Although steatosis itself does not affect the stiffness measurements, fat deposition can cause inflammation, with consequent increase of liver stiffness, even before the onset of fibrosis [21]. Moreover, as already shown for TE, even in MR, the meal can affect the reliability of stiffness measurements, suggesting the need of fasting prior to perform the exam [22].

In conclusion, the results of several studies suggest that the wider

Citation: Cristina S. The New Era for Liver Fibrosis: The Non Invasive Assessment in Hepatitis C Virus Infected Patients. Austin J Radiol. 2015;2(1): 1007.

availability of non invasive test for the assessment of liver fibrosis may soon date the way for a reduced need of liver biopsy in patients with chronic liver disease HCV-related.

Acknowledgement

I would like to gratefully and sincerely thank Prof. Zignego A.L. and Prof. Milani S. for critically reviewing the manuscript.

References

1. Stasi C, Arena U, Vizzutti F, Zignego AL, Monti M, Laffi G, et al. Transient elastography for the assessment of liver fibrosis in patients with chronic viral hepatitis: the missing tool? Dig Liver Dis. 2009; 41: 863-866.
2. Ferraioli G, Tinelli C, Dal Bello B, Zicchetti M, Lissandrin R, Filice G, et al. Performance of liver stiffness measurements by transient elastography in chronic hepatitis. World J Gastroenterol. 2013; 19: 49-56.
3. Tsochatzis EA, Gurusamy KS, Ntaoula S, Cholongitas E, Davidson BR, Burroughs AK. Elastography for the diagnosis of severity of fibrosis in chronic liver disease: a meta-analysis of diagnostic accuracy. J Hepatol. 2011; 54: 650-659.
4. Mederacke I, Wursthorn K, Kirschner J, Rifai K, Manns MP, Wedemeyer H, et al. Food intake increases liver stiffness in patients with chronic or resolved hepatitis C virus infection. Liver Int. 2009; 29: 1500-1506.
5. Arena U, Lupsor Platon M, Stasi C, Moscarella S, Assarat A, Bedogni G, et al. Liver stiffness is influenced by a standardized meal in patients with chronic hepatitis C virus at different stages of fibrotic evolution. Hepatology. 2013; 58: 65-72.
6. Ogawa E, Furusyo N, Toyoda K, Takeoka H, Maeda S, Hayashi J. The longitudinal quantitative assessment by transient elastography of chronic hepatitis C patients treated with pegylated interferon alpha-2b and ribavirin. Antiviral Res. 2009; 83: 127-134.
7. Arima Y, Kawabe N, Hashimoto S, Harata M, Nitta Y, Murao M, et al. Reduction of liver stiffness by interferon treatment in the patients with chronic hepatitis C. Hepatol Res. 2010; 40: 383-392.
8. Macias J, del Valle J, Rivero A, Mira JA, Camacho A, Merchante N, et al. Changes in liver stiffness in patients with chronic hepatitis C with and without HIV co-infection treated with pegylated interferon plus ribavirin. J Antimicrob Chemother. 2010; 65: 2204-2211.
9. Wang JH, Changchien CS, Hung CH, Tung WC, Kee KM, Chen CH, et al. Liver stiffness decrease after effective antiviral therapy in patients with chronic hepatitis C: Longitudinal study using FibroScan. J Gastroenterol Hepatol. 2010; 25: 964-969.
10. Martinez SM, Foucher J, Combis JM, Metivier S, Brunetto M, Capron D, et al. Longitudinal liver stiffness assessment in patients with chronic hepatitis C undergoing antiviral therapy. PLoS One. 2012; 7: 47715.
11. Stasi C, Arena U, Zignego AL, Corti G, Monti M, Triboli E, et al. Longitudinal assessment of liver stiffness in patients undergoing antiviral treatment for hepatitis C. Dig Liver Dis. 2013; 45: 840-843.
12. Stasi C, Piluso A, Arena U, Salomoni E, Montalto P, Monti M, et al. Evaluation of prognostic value of liver stiffness in hepatitis C virus patients treated with triple or dual antiviral therapy: a prospective, pilot study. World J Gastroenterol. 2014.
13. Andersen ES, Moessner BK, Christensen PB, Kjaer M, Krarup H, Lillevang S, et al. Lower liver stiffness in patients with sustained virological response 4 years after treatment for chronic hepatitis C. Eur J Gastroenterol Hepatol. 2011; 23: 41-44.
14. Stasi C, Triboli E, Arena U, Urraro T, Petrarca A, Gragnani L, et al. Assessment of liver stiffness in patients with HCV and mixed cryoglobulinemia undergoing rituximab treatment. J Transl Med. 2014; 12: 21.
15. Arena U, Vizzutti F, Abraldes JG, Corti G, Stasi C, Moscarella S, et al. Reliability of transient elastography for the diagnosis of advanced fibrosis in chronic hepatitis C. Gut. 2008; 57: 1288-1293.
16. Sporea I, Bota S, Peck-Radosavljevic M, Sirli R, Tanaka H, Iijima H, et al. Acoustic Radiation Force Impulse elastography for fibrosis evaluation in patients with chronic hepatitis C: an international multicenter study. Eur J Radiol. 2012.
17. Faria SC, Ganesan K, Mwangi I, Shiehmorteza M, Viamonte B, Mazhar S, et al. MR imaging of liver fibrosis: current state of the art. Radiographics. 2009; 29: 1615-1635.
18. Shire NJ, Yin M, Chen J, Railkar RA, Fox-Bosetti S, Johnson SM, et al. Test-retest repeatability of MR elastography for noninvasive liver fibrosis assessment in hepatitis C. J Magn Reson Imaging. 2011; 34: 947-955.
19. Motosugi U, Ichikawa T, Sano K, Sou H, Muhi A, Koshiishi T, et al. Magnetic resonance elastography of the liver: preliminary results and estimation of inter-rater reliability. Jpn J Radiol. 2010; 28: 623-627.
20. Ichikawa S, Motosugi U, Ichikawa T, Sano K, Morisaka H, Enomoto N, Matsuda M. Magnetic resonance elastography for staging liver fibrosis in chronic hepatitis C. Magn Reson Med Sci. 2012; 11: 291-297.
21. Chen J, Talwalkar JA, Yin M, Glaser KJ, Sanderson SO, Ehman RL. Early detection of nonalcoholic steatohepatitis in patients with nonalcoholic fatty liver disease by using MR elastography. Radiology. 2011; 259: 749-756.
22. Yin M, Talwalkar JA, Glaser KJ, Venkatesh SK, Chen J, Manduca A, et al. Dynamic postprandial hepatic stiffness augmentation assessed with MR elastography in patients with chronic liver disease. AJR Am J Roentgenol. 2011; 197: 64-70.

Austin J Radiol - Volume 2 Issue 1 - 2014
ISSN : 2473-0637 | www.austinpublishinggroup.com

Citation: Cristina S. The New Era for Liver Fibrosis: The Non Invasive Assessment in Hepatitis C Virus Infected Patients. Austin J Radiol. 2014;2(1): 1007.