

● *WFUMB Guidelines and Recommendations on the Clinical use of Ultrasound Elastography*

FOREWORD TO THE WFUMB GUIDELINES AND RECOMMENDATIONS ON THE CLINICAL USE OF ULTRASOUND ELASTOGRAPHY

The recent trend of a significant increase in publications on elastography evoked the World Federation for Ultrasound in Medicine and Biology (WFUMB) to feel the urgent need to create guidelines on the clinical use of elastography. At the WFUMB congress in Vienna in August 2011, the WFUMB leadership decided to take initiative to create the guidelines; the first consensus meeting was held in March 2013 in Washington, DC, and this was followed by sponsoring an elastography consensus session at the WFUMB Congress in San Paolo in May 2013. This is the first time that elastography experts from around the world have come together to create unified guidelines on the clinical use of this technique.

Conventional ultrasound echography portrays differences in the acoustic properties of soft tissues (mainly echogenicity but also, to some extent, attenuation), whereas elasticity imaging (elastography) portrays differences in their elastic properties (e.g., elasticity and viscosity). The effective medical use of the two modalities in combination therefore requires sophisticated judgment based on knowledge of how tissue differences and pathologies influence these two different types of mechanical characteristics. Furthermore, the rapid dissemination of ultrasound elastography machines into the market place, the range of apparently different elasticity imaging methods available and the daunting research literature on the physics and medical applications of elastography have created a potentially confusing situation for those who may be considering using elastography. The definite need was therefore strongly felt by the WFUMB to create this set of guidelines and recommendations on the clinical use of ultrasound elastography, which is divided into two clinical papers, each dealing with an existing important application of elastography (of the liver and breast), and to precede these with a basic paper, the goal of which is to introduce the fundamental physics and associated terminology underlying elastography technologies. A similar set of guidelines has been published recently by the European Federation for Ultrasound in Medicine and Biology (EFSUMB) as two papers, one on the basic principles and technology (Bamber et al. 2013), and the other on the main clinical applications (Cosgrove et al. 2013). Following these publications, another set of guidelines has been published by the Japan Society of Ultrasonics in Medicine (JSUM) as three papers, one on the basics and terminology (Shiina 2013), one on liver applications (Kudo et al. 2013), and the other on breast applications (Nakashima et al. 2013).

Although there are some differences in the clinical topics covered, the main difference between the WFUMB guidelines and recommendations and those of the EFSUMB is that the WFUMB guidelines, being divided into three discrete papers instead of two, are able to cover some of the topics in greater detail. In addition, the main difference between the WFUMB guidelines and the JSUM guidelines on the clinical topics covered is that the

former are essentially evidenced-based guidelines and the latter are consensus-based guidelines. The most important part of the WFUMB guidelines is the basic principles and terminology part; in other words, we have included a question and answer section, an extensive appendix, and a glossary of terms, which are not found in the other guidelines. We have also endeavored to ensure that the terminology and descriptions, although not identical, are broadly compatible across the three sets of guidelines.

This international cooperative product gives the document more strength and proclaims the worldwide recognition of the use of elastography to diagnose breast and liver diseases, resulting in these three sets of guidelines that should be a major reference for anyone who is going to start or who is already performing elastography of the breast and the liver.

MASATOSHI KUDO, MD, PhD
Immediate Past President, WFUMB
Organizer, WFUMB Elastography Guideline Project
*Department of Gastroenterology and Hepatology
Kinki University School of Medicine
Osaka, Japan*

REFERENCES

- Bamber J, Cosgrove D, Dietrich CF, Fromageau J, Bojunga J, Calliada F, Cantisani V, Correas J-M, D'Onofrio M, Drakonaki EE, Fink M, Friedrich-Rust M, Gilja OH, Havre RF, Jenssen C, Klausner AS, Ohlinger R, Săftoiu A, Schaefer F, Sporea I, Piscaglia F. EFSUMB guidelines and recommendations on the clinical use of ultrasound elastography. Part 1: Basic principles and technology. *Ultraschall in Med* 2013;34(2):169–184.
- Cosgrove D, Piscaglia F, Bamber J, Bojunga J, Correas J-M, Gilja OH, Klausner AS, Sporea I, Calliada F, Cantisani V, D'Onofrio M, Drakonaki EE, Fink M, Friedrich-Rust M, Fromageau J, Havre RF, Jenssen C, Ohlinger R, Săftoiu A, Schaefer F, Dietrich CF. EFSUMB guidelines and recommendations on the clinical use of ultrasound elastography. Part 2: Clinical applications. *Ultraschall in Med* 2013;34(3):238–253.
- Kudo M, Shiina T, Moriyasu F, Iijima H, Tateishi R, Yada N, Fujimoto K, Morikawa H, Hirooka M, Sumino Y, Kumada T. JSUM ultrasound elastography practice guidelines: liver. *J Med Ultrasonics* 2013;40:325–357.
- Nakashima K, Shiina T, Sakurai M, Enokido K, Endo T, Tsunoda H, Takada E, Umamoto T, Ueno E. JSUM ultrasound elastography practice guidelines: breast. *J Med Ultrasonics* 2013;40:359–391.
- Shiina T. JSUM ultrasound elastography practice guidelines: basics and terminology. *J Med Ultrasonics* 2013;40:309–323.

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