Book Review

Richard G Barr. *Breast Elastography*. New York, USA: Thieme Medical Publishers Inc, 2015. ISBN: 9781604068528; 192 pp.: £68.50 (hbk)

Breast elastography has been written by one of the early adopters of breast elastography who has published quite extensively on the subject. Richard Barr has gained considerable experience, both in clinical research and clinical use of elastography, using a number of different ultrasound manufacturers'

machines. He has managed to distil, what is quite a broad complex subject, into readable and understandable chapters and case examples.

The book, written for both sonographers and radiologists involved in breast imaging, describes the current different methods of elastography imaging, how they can be used clinically to determine the probability of lesions being benign or malignant and highlights many of the pitfalls and areas of difficulty. It also shows how elastography information can potentially improve the BIRADS scoring of breast lesions with ultrasound.

The first 40 pages summarise the physics, underlying elastography techniques and the variations in the different methods of assessing tissue stiffness which are the core of elastography imaging. For the practitioner already using elastography in their breast imaging, this is a good refresher course, and for those who are new to breast elastography, it is an excellent introduction to the way in which elastography works. The physics and technical background have been simplified and made reader friendly. Key factors such as pre-compression, the differences between strain elastography and shear wave elastography and the sub-modalities between the two are explained to allow users to begin to understand the differences between them. Descriptions of the imaging patterns, limitations and artifacts of elastography imaging are covered for many of the current generation of machines. Because of

changing developments in this field not every machine is comprehensively covered. Readers can use the book to help understand what they observe with their particular machine, while they find out more about the methodology of the elastography imaging used in that ultrasound machine.

The remaining 60% of the book consists of 70 detailed examples of different lesions with their ultrasound, color Doppler and elastography appearances. Many cases include the use of different elastography modalities on the lesion. The clinical cases are best read a few at a time with reference back to the initial chapters, rather than attempting to read through in continuity, to increase understanding of elastography. Each example is described in detail and the explanations add information and understanding of what is happening and how management can be effected in the individual case.

Some users of the book may need to do more background reading on the pathologies which occur in the individual cases as the detail and natural history of the pathological conditions are not always covered in the cases. Advanced elastography users will benefit from further reading of the physics, tissue mechanics and imaging techniques, many of which are referenced in the book. In particular, important concepts which are not covered include non-linearity, poroelastography and viscoelastography as well as spring and dashpot (shock absorber like) behaviour of tissues. These properties help explain some of the differences in tissue behaviour when deformed by an increasing force compared to a decreasing force and variation associated with different applied forces.

This book shows where elastography can increase diagnostic confidence and when it may be less helpful, necessitating a core biopsy or follow up examination. It is an excellent £70 worth for anyone who wishes to learn about or consolidate their initial knowledge of breast elastography.

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