Method and Apparatus for Cardiac Elastography

INVENTORS • Tomy Varghese, Christian Breburda, James Zagzebski, Peter Rahko

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an improved device and method for producing in vivo elastographic images of the heart to diagnose cardiac disease.

OVERVIEW

Elastography is a new medical imaging technique that detects and images the stiffness properties – such as axial strain, lateral strain and Poisson’s ratio – of tissues under compression. Given the heart’s ability, through its muscular action, to provide the needed compression for elastography, this technique shows substantial promise as a tool for detecting cardiac disease. The strains depicted in an elastographic image can reveal both the normal contraction associated with proper heart function, and the reduction in contraction associated with heart dysfunction.

THE INVENTION

UW-Madison researchers have developed an improved device and method for producing in vivo elastographic images of the heart to diagnose cardiac disease. The system collects a two-dimensional array of strain data points from heart tissue, each of which has an associated magnitude and sign (i.e., positive or negative value). The data array is then used to create a color image of the heart in which color brightness indicates the magnitude of the strain at any particular point in the tissue, and the hue represents the strain’s positive or negative sign, i.e., whether the tissue is contracted or relaxed.
APPLICATIONS

• Diagnosing cardiac disease
• Characterizing areas of hypokinesia and akinesia
• Diagnosing infarction
• Providing new physiologic information on systolic and diastolic events
• Potentially useful as a rapid, low-cost screening tool prior to use of more complex and costly diagnostic procedures, such as angiography, nuclear medicine, MRI or CT

KEY BENEFITS

• Provides visually-intuitive, color images of heart function that clearly distinguish between muscle compression and relaxation
• More quantitative and less reliant on operator expertise than current echocardiography techniques for diagnosing cardiac disease
• Simple and non-invasive
• Minimizes motion artifacts due to translation of the heart

ADDITIONAL INFORMATION

Tech Fields
Medical Imaging - Ultrasound

CONTACT INFORMATION

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846.