MRI Method for Assessing Myocardial Viability

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a technique for retrospectively selecting the optimal TI value during MRI scans of heart tissue.

Overview

Magnetic resonance imaging (MRI) of heart tissue viability and function typically includes a step in which the inversion time (TI) is set so that the signal from normal heart tissue is suppressed in the resulting MRI image. Infarcted tissue, on the other hand, will appear very bright, making diagnosis of tissue damage and death much easier.

Achieving the optimal TI setting is not straightforward, however. The TI period varies from patient to patient and depends on the contrast dosage used. As a result, approximately 80 percent of myocardial MRI scans must be repeated with a different TI value in order to obtain a clinically acceptable image.

The Invention

Two UW-Madison researchers have now created a technique for retrospectively selecting the optimal TI value during MRI scans of heart tissue. Their invention takes advantage of the under-sampled projection reconstruction (PR) acquisition technique, which collects k-space data as a series of radial projections through the center of k-space. Because PR acquisition intrinsically over-samples the center of k-space, TI can be retrospectively selected by employing a sliding-window technique with a temporal aperture varying with the radial distance.

Applications

- Evaluation of myocardial viability and function

Key Benefits

- Allows easy optimization of TI because TI is selected retrospectively
- Eliminates the need for repeated scans with different TI values
- Removes effects of operator error on TI selection
- Permits simultaneous evaluation of myocardial viability and function in the same image
- Achieves shorter scan times without significantly affecting image resolution, increasing patient comfort and reducing artifacts due to patient motion
- Over-sampling the center of k-space reduces image sensitivity to motion artifacts.

Additional Information

For More Information About the Inventors

- Thomas Grist

Tech Fields

- Medical Imaging : MRI

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