Single MRI Scan Acquires Multiple Sets of Inversion Recovery Data

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for obtaining both single and double inversion recovery data in a single MRI scan that may take just 10 minutes.

Overview

Inversion recovery (IR) techniques commonly are used in MRI either to null signals or increase signal contrast between tissues. In the process, different types of radiofrequency pulses are followed by data acquisition. IR is widely used in brain imaging to enhance contrast between tissues and/or reduce unwanted fluid signals.

Double IR (DIR) is a related technique that applies two IR radiofrequency pulses in succession. The interval between pulses was previously a 'dead' period in which no data is acquired. Although time-consuming (scans can take up to 15 minutes), DIR is attractive because it can provide better contrast between gray and white brain matter and depict cortex lesions, such as those associated with multiple sclerosis.

Since IR and DIR often are performed separately, scan-times for performing both can be arduous. Streamlining the process would benefit patients as well as health professionals.

The Invention

UW–Madison researchers have developed a method that expedites inversion recovery by acquiring data after each IR radiofrequency pulse. In this way, both single IR and DIR data can be obtained in a single, condensed scan.

In the method, each IR pulse is followed by an excitation pulse and data acquisition. Any suitable data acquisition scheme can be employed, such as VIPR (vastly undersampled isotropic projection reconstruction). Multiple images of the subject are reconstructed from this data. Data after the first image can produce a traditional T1-weighted image, while data after the second inversion produces a traditional DIR image.

Applications

- Software for neural MRI

Key Benefits

- Condensed IR/DIR scan takes less than 15 minutes to complete.
- No wasted dead time between IR pulses
- Multiple images across a wide range of contrast settings can be obtained in a single scan.

Additional Information

For More Information About the Inventors

- Andrew Alexander

Tech Fields

- Medical Imaging : MRI

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