Office for Technology Commercialization

Improved Magnetization Transfer Imaging

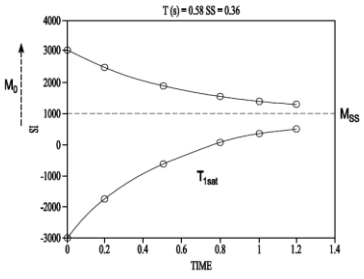
Current magnetization transfer (MT) imaging with MRI scanners has been limited clinically due to RF heating of the subject, which ultimately limits the sensitivity and specificity of the technique for diagnosis. Researchers at the University of Minnesota have developed an improved pulse sequence and post processing technique to dramatically improve magnetization transfer (MT) imaging while improving safety by reducing SAR (specific absorption rate) which measures tissue heating.

The method combines a conventional pulse with an inversion pulse, which flips the orientation of the magnetization by 180 degrees. By including the "negative data" a larger dynamic range is available to accurately calculate the magnetization transfer with shorter duration application of RF energy. The MT MRI pulse sequence and post processing is implemented by software and compatible with all MRI scanners.

In particular, this technology greatly enhances the ability to identify myelin in the diagnosis and monitoring of disease progression/treatment in demyelinating neuropathies, such as multiple sclerosis (MS). It is expected that this will enable MT MRI scans to become common clinical practice.

Features & Benefits

- Enhanced ability to image demyelination in the brain for diagnosis of certain neuropathies
- Improved imaging of other white matter, such as cartilage
- Larger Dynamic Range for greater sensitivity and specificity of MT
- Better resolution and image quality compared to conventional MT MRI
- Reduced RF power requirement for improved SAR
- Applicable to all clinical MRI scanners, e.g. 3T, 1.5T, and open-bore, low-field scanners



Graph of the MT pulse sequence. Both the pulse and inversion pulse are shown as a function of time. The resolution is improved despite the shorter exposure time

Technology Status

Conducting trial with MS patients

IP Status

PCT patent application filed – PCT/US11/32485

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