Method to Suppress Background Tissues in Time-Resolved Magnetic Resonance Angiography

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an improved method for removing fat and other static background tissues from a time-resolved series of MRA images.

Overview

Angiographic exams are typically interested in the arterial vasculature and not in fat or other static background tissues. To remove background tissue during contrast-enhanced magnetic resonance angiography (MRA), a mask image is usually taken before the contrast agent is injected, and then subtracted from a second image acquired with the contrast agent. This process has a number of drawbacks, however: it requires additional time, decreases the signal-to-noise ratio of the final image, causes artifacts if the patient moves between the two scans and requires operator intervention to remove the static signal.

The Invention

UW-Madison researchers have developed a method for removing static background tissues from a time-resolved series of MRA images without the need for a mask image or operator intervention. Based on a previous invention, called Vastly under-sampled Isotropic PRojection (VIPR), this method is a non-linear algorithm that leaves the high spatial frequency component of image data unaltered, while analyzing the low spatial frequency component pixel by pixel. A matrix equation that uses temporal information provided by VIPR at lower spatial frequencies is solved to identify pixels coming from static and linearly increasing signal. These pixels are then attenuated, resulting in suppression of fat and other background tissue in the final, diagnostic image.

Applications

- Suppression of fat and other background tissues during MRA

Key Benefits

- Suppresses fat and other background tissues in MRI images to aid clinical diagnosis
- Requires no operator intervention
- Eliminates the need for a mask image, saving patients time in the MRI scanner, reducing the chance of artifacts due to patient movement and increasing signal-to-noise ratios

Additional Information

For More Information About the Inventors

- Walter Block

Tech Fields

- Medical Imaging : MRI

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