Magnetic Resonance Angiography with Vessel Segmentation

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WARF: P99147US
View U.S. Patent No. 6,381,486 in PDF format.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an improved contrast enhanced MRA method.

OVERVIEW

Magnetic resonance angiography (MRA) is a special type of magnetic resonance imaging (MRI) that generates images of blood flow through vessels. MRA has many medical applications, including the diagnosis of artery and veins abnormalities (e.g., aneurysms in the brain).

To enhance the diagnostic capability of MRA, a contrast agent can be injected prior to the MRA scan. The trick with this technique is that image data must be acquired at the moment the contrast agent is flowing through the vessels of interest. Thus, images must be taken very rapidly, severely limiting their resolution and quality.

THE INVENTION

UW-Madison researchers have developed a vessel segmentation technique that provides an improved contrast enhanced MRA (CE-MRA) method. Initially, a low-resolution image is captured to pinpoint the locations of arteries and veins. This makes it possible to use images taken after the contrast agent has passed through the region of interest (vessel segmentation technique). The initial images are combined with later images to provide a high resolution, higher quality arterial image.

APPLICATIONS

• CE-MRA of blood vessels

KEY BENEFITS

• Unlike X-ray imaging methods, which are the current gold standard for studying human vasculature, this technique does not use an invasive catheter to inject the
contrast agent (usually positioned in the groin via a needle).
• Will not subject the patient to potentially harmful ionizing radiation
• Projected to provide the same detail as an x-ray angiogram
• CE-MRA has immense clinical utility.
• Provides a high resolution, high signal-to-noise ratio image of the human vasculature
• Can be used with a number of different pulse sequences
• Preferably uses a 3-D gradient recalled echo pulse sequence

ADDITIONAL INFORMATION

Related Technologies
WARF reference number P00188US describes an improved segmentation approach, which includes a 2-D analysis using a frequency dependent approach.

Tech Fields
Medical Imaging - MRI

CONTACT INFORMATION

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