MR Imaging to Detect Placental Abnormalities

View U.S. Patent Application Publication No. US-2024-0090790 in PDF format.

WARF: P220314US01

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The Wisconsin Alumni Research Foundation is seeking commercial partners interested in developing an MR-based imaging method to depict placental anatomy and detect placental abnormalities.

Overview

Medical imaging to detect structural abnormalities of the placenta is crucial in at least two pathological cases. First, placenta accreta spectrum, where the placenta grows too deeply into the wall of the uterus and is unable to detach at childbirth. Second, placental insufficiency, which leads to fetal growth restriction (FGR), where the supply of nutrients and oxygen is inadequate to support normal aerobic growth of the fetus.

Current medical imaging approaches that try to detect such abnormalities include ultrasound imaging and, in some cases, additional magnetic resonance imaging (MRI). Unfortunately, neither imaging modality provides a clear enough picture for diagnosis. More specifically, neither modality enables enough resolution to distinguish maternal blood flow from fetal blood flow, which is necessary to properly diagnose and develop a clinical course of action.

The Invention

A UW-Madison researcher has developed a method to depict the placental anatomy and the maternal and fetal circulations using ferumoxytol and image post-processing (using volume rendering techniques). The method works via the overlaying of minimum and maximum intensity projection *in vivo* MR images of the placenta.

Depiction of this anatomy *in vivo* is unprecedented and can provide new insights into placental function, allowing possible therapeutic interventions. It provides the opportunity to make pathologic diagnoses during pregnancy, which were previously possible only after birth. This knowledge could lead to tailored therapeutic interventions during gestation.

Applications

- Diagnosis of placenta accreta spectrum during pregnancy
- Diagnosis of placental FGR during pregnancy
- Correlation of structural imaging acquired during pregnancy to pathologic diagnoses post-delivery to establish early markers of placental disease

Key Benefits

- Better definition of placental anatomical structures
- Simultaneous image acquisition and interactive visualization of multiple blood supplies
- *In vivo* imaging of placental blood supply

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Tech Fields

- Medical Imaging : MRI

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