Docket #: S08-370

A noninvasive in vivo assay of inflammation and infection using hyperpolarized 13C magnetic resonance imaging.

Stanford researchers have further developed a new technique for magnetic resonance imaging (MRI). The technique called hyperpolarized carbon-13 MRI dramatically increases the sensitivity for molecular processes. It not only provides anatomic imaging, but also characterizes metabolic process of both normal and diseased tissue with carbon-based imaging probes. The investigators show an additional application of the hyperpolarized carbon-13 MRI technology with respect to the detection and monitoring of infectious and inflammatory disease. This invention will help detect the precise anatomical location of these types of disease as well as provide information on disease activity. Currently, there are no clinical tests available that effectively detect these diseases or monitor the response to therapy. Clinicians must rely on subjective measures of how the patient feels, secondary signs such as blood tests (white blood cell count, CRP, etc), non-specific nuclear medicine imaging, or anatomic imaging (conventional MRI without this molecular imaging technique, ultrasound, computed tomography, and radiographs). This new subjective and quantitative imaging test may detect disease earlier and provide data for more tailored therapy. In addition, this invention may help accelerate drug development since this non-invasive assay allows for smaller numbers of subjects and shorter amounts of time to test new drugs.

Applications

- Detection and monitoring of inflammatory and infectious diseases
- Drug development

Advantages

- Non-invasive
- Quantitative
- Early detection of disease
- Precise anatomical location of disease
- Monitor disease activity

Patents

- Published Application: 20120128593

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