Optical Tomographic Imaging System for Rheumatoid Arthritis (RA) and Joint Disease Detection

Technology #m11-007

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Rheumatoid Arthritis (RA) is an autoimmune disease that frequently results in chronic inflammation of the joints. Although no cure for RA is currently known, early treatment of the disease with disease-modifying anti-rheumatic drugs (DMARDs) can improve patient prognosis. Continuous wave optical techniques can be used to detect RA by exploiting the observed correlation between an elevated light absorption coefficient inside the joint with RA incidence. However, their inability to separate absorption and scattering effects hampers their sensitivity and specificity. Sensitive methods of detection are needed to identify RA at earlier time points, as this positively correlates with halted disease progression.

Diagnostic Imaging System, Frequency-Domain Optical Tomographic Imaging (FDOT) Detects RA With Greater Sensitivity

The technology is an imaging system referred to as Frequency-Domain Optical Tomographic Imaging (FDOT) that can detect RA in peripheral joints with greater sensitivity and specificity and lower cost than existing imaging techniques.

Applications: • The technology can be used to detect RA in peripheral joints. • The technology can potentially be used for diagnostic imaging of other soft tissues. • Alternative to diagnosis of RA by magnetic resonance imagining (MRI) and ultrasounds.

Advantages: • The technology can potentially detect rheumatoid arthritis at an earlier stage in its development than other imaging technologies, which can facilitate early treatment. • The technology is considerably less expensive than current imaging technologies such as MRI. • Allows for close monitoring of DMARD efficacy in patients.

Patent Status: Patent Pending

Licensing Status: Available for a License and Sponsored Research Support


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