Quantitative Multiparametric PET/CT Imaging for Nonalcoholic Fatty Liver Diseases

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ABSTRACT

Researchers at the University of California, Davis have developed a quantitative imaging method to detect and characterize liver inflammation for diagnosing a wide spectrum of nonalcoholic fatty liver diseases (NAFLDs).

FULL DESCRIPTION

Many patients diagnosed with nonalcoholic fatty liver disease (NAFLD) develop nonalcoholic steatohepatitis (NASH) – a more serious form of NAFLD which can cause swelling, scarring, and potential progression to cirrhosis of the injured liver. Although some imaging methods such as ultrasound and MRI have been developed to quantify liver fat and advanced fibrosis, no quantitative imaging methods exist for the detection and characterization of hepatic inflammation.

Researchers at the University of California, Davis have developed an imaging method to simultaneously detect and characterize hepatic inflammation and steatosis associated with NAFLD. This new method utilizes dynamic positron emission tomography/computed tomography (PET/CT) scanning, common radiotracer ^{18}F-fluorodeoxyglucose (FDG) and tracer kinetic modeling to obtain quantitative parameters. This method simultaneously images hepatic inflammation and steatosis to detect and characterize major NAFLD diseases - fatty liver and NASH. The method can also be potentially used to replace invasive biopsies in a clinical setting to measure liver inflammation and steatosis for diagnosing NASH and other NAFLDs.

APPLICATIONS

- Detection and characterization of a wide spectrum of nonalcoholic fatty liver disease
- Imaging hepatic inflammation and steatosis associated with NAFLD, NASH and liver cirrhosis

FEATURES/BENEFITS

- Noninvasive
- Applicable in detection and characterization
- Quantitative
- Clinically effective

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,883,223	01/30/2024	2018-060

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Techniques for Improving Positron Emission Tomography Image Quality and Tracking Real-Time Biological Processes
- Real-Time Tissue Assessment During Surgical Procedures
- Multiparametric Imaging with PET Scans Using High Temporal-Resolution Dynamic Data Acquisition and Modeling

INVENTORS

- Badawi, Ramsey D.
- Sarkar, Souvik
- Wang, Guobao

OTHER INFORMATION

KEYWORDS

nonalcoholic fatty liver disease, NAFLD, nonalcoholic steatohepatitis, NASH, dynamic positron emission tomography, PET/CT, computed tomography, hepatic inflammation, steatosis, fibrosis

CATEGORIZED AS

- **Imaging**
  - Medical
  - Other
- **Medical**
  - Imaging

RELATED CASES

2018-060-0

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