Measurement Of Blood Flow Dynamics With X-Ray Computed Tomography: Dynamic Ct Angiography

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INVENTION NOVELTY

This invention identifies a method to accurately measure flow dynamics, such as velocity and volume, from Computed Tomography scans of blood vessels in a patient.

VALUE PROPOSITION

Use of Computed Tomography (CT) Angiography is widely spread to generate static anatomic images of blood vessels in patients, especially in those suffering from cardiovascular disease. However, the acquisition of functional information on flow dynamics is limited either by invasiveness (e.g. Catheter angiography) or scope (e.g. MRI or ultrasound). Much like Doppler did for ultrasound imaging, the addition of functional flow information for CT imaging would dramatically improve the diagnostic capability of CT for angiography. The technology encompassed by this invention allows the acquisition of flow dynamics to complement vessel diameter data obtained from CTAs.

This novel invention provides the following advantages:

- **Higher reliability**: Method uses raw projectional data acquired during the CT scan rather than reconstructed images
- **High spatial resolution**: 1000x increased resolution versus image-based dynamic techniques
- **Precise measurement of blood flow** in narrow passages of fast flowing measures
- **Ease of use**
- **Non invasive**
- **Rapid acquisition** of data
- **Increase in the functional relevance** of the morphological results obtained from a regular CTA

TECHNOLOGY DESCRIPTION

Researchers at the University of California, San Francisco have identified a novel method to measure blood flow dynamics, such as volume and turbulence, using x-ray computed tomography. The method uses data obtained from a multi-row CT scanner to infer temporal changes associated to the flow of a contrast medium in the subject and

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OTHER INFORMATION

KEYWORDS

dynamic computed tomography angiography, x-ray, flow dynamics

CATEGORIZED AS

- **Imaging**
  - **Medical**
    - Devices
    - Disease: Cardiovascular and Circulatory System
    - Imaging
  - **Research Tools**
    - Other

RELATED CASES

2008-032-0

determine a contrast concentration at each of a plurality of projection angles, which allows the generation of information associated to the blood flow velocity of the subject.

APPLICATION

- Arterial disease clinical applications
- Diagnostic techniques involving the use of contrast agents
- Research tool to study the physiology of blood flow in vivo

LOOKING FOR PARTNERS

To develop and commercialize this technology as a novel method to capture data on flow dynamics in patients.

STAGE OF DEVELOPMENT

Preclinical

RELATED MATERIALS

DATA AVAILABILITY

Under NDA/CDA

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,082,211	07/14/2015	2008-032

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