Medical Imaging

Reducing Operator Dose in Interventional CT

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The Wisconsin Alumni Research Foundation is seeking commercial partners interested in developing a method for reducing CT dose that allows for live images that aid in needle placement for interventional procedures.

Overview

Computed tomography (CT)-guided interventional procedures are becoming more and more common. However, CT guidance is commonly performed off-line, requiring clinicians to leave the room every time an image is acquired. This is done to reduce the CT dose delivered to the clinician.

CT fluoroscopy (CTF) is an on-line procedure that does not require the clinician to leave the room, providing more responsive image guidance for the interventional procedure. However, lowering the dose delivered to the clinician during CTF is a major hurdle that needs to be overcome to grow the adoption of CTF and provide for improved interventional procedures for both clinical staff and patients.

The Invention

UW-Madison researchers have developed a method to control X-ray tube parameters that substantially lowers (by 35%) the dose delivered to clinicians during CTF. By substantially lowering the dose, CTF can be performed more frequently and safely by interventionalists. When compared to the common off-line CT-guided intervention, CTF provides a much smoother operation for the clinician performing the intervention. Interventions can be performed faster by a better image guidance system while maintaining accuracy.

Applications

This method is applicable to any interventional procedure that uses CT imaging for guidance, included but not limited to:

- Spinal injections
- Spinal biopsies
- Chest biopsies
- Abdominal aspirations
- Abdominal biopsies
- Abdominal drainages

Key Benefits

- Increases the safety of CTF-guided interventional procedures by reducing clinician dose
- Allows for more accurate needle placement by providing more responsive images
- Shortens the procedure, benefiting clinician and patient
- No comparable tool is currently available on the market.

Stage of Development

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This method has been developed and validated at UW-Madison, leading to a peer reviewed publication in the Journal of Vascular and Interventional Radiology.

Additional Information

For More Information About the Inventors

- Timothy Szczykutowicz
- Fred Lee

Publications

- Knott et al. CT Fluoroscopy for Image-Guided Procedures: Physician Radiation Dose During Full-Rotation and Partial-Angle CT scanning. Journal of Vascular and Interventional Radiology 32.3 (2021): 439-446.

Tech Fields

- Medical Imaging : CT

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

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