

PRODUCT

Patented system and method for the automated detection of AAS from CT Images.

INDICATION

Algorithms incorporated into radiology-based decision support software platform to efficiently detect, notify, and alert the care team of AAS.

VALUE PROPOSITION

- Autonomous, early detection and prompt alerting of clinical team.
- Reduce time to diagnose and treat (less than 7 minutes).
- Reduce AAS-associated mortality, and improve worklist prioritization and clinical communication.
- Save lives, time and costs.

DEVELOPMENT STAGE

System and method validated in POC study of AAS patients.

INTELLECTUAL PROPERTY

Patent #: 11,475,561 B2
Patent App #: 17/943,494

RELATED PUBLICATIONS

Identification of acute aortic syndromes based on cross-sectional variability of Hounsfield units. Int. J of Cardiology, 382, 1 July 2023, Pages 91-95.

CONTACT INFORMATION

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Automated Detection of Acute Aortic Syndromes via CT Image Analysis

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UNMET NEED

Acute aortic syndromes (AAS) are a group of emergency conditions that affect the aorta, the main artery that carries blood from the heart to the rest of the body. AAS includes several conditions, such as aortic dissection, intramural hematoma, and aortic rupture. These conditions involve a breakdown of the wall of the aorta, which can cause bleeding within or through the layers of the aorta. AAS can be painful and life-threatening, often requiring immediate medical attention. Initial presentation is non-specific, and AAS may be missed since it mimics other common conditions, including coronary ischemia, stroke, and acute abdominal illness. Acute aortic dissection has high early mortality where 40% die immediately, 1-3% die per hour during the first 24 h, and 50% die within 48 hours; prompt diagnosis and emergency treatment are critical. Presently AAS diagnoses are based on aortic imaging using contrast-enhanced computed tomography (CT). Methods and systems to efficiently and quickly diagnose and treat AD are needed. Such tools could notify, communicate, and coordinate diagnosis and treatment more promptly.

SOLUTION

CT image analysis algorithm for detection of AAS, allowing for early alerting of the clinical team regarding positive findings and reducing time to diagnosis and treatment. The method systematically evaluates the in-slice variability of the contrast enhancement intensities (Hounsfield Units) that indicates AAS patients. The fully automatic system has been rigorously validated at multiple sites using multiple vendors and models. The system exhibits the following performance: Sensitivity (94%); Specificity (97%), and AUC of 0.98. The platform can also detect intramural hematoma cases with a sensitivity of 88%.

