ESC CONGRESS 2010
STOCKHOLM 28 August 1 September 2010
EUROPEAN SOCIETY OF CARDIOLOGY®

High –Pitch Dual-Source CT allows Triple-Rule-Out with a High Accuracy and a low radiation Dose in Real Life Patients: First Experience in Nonselected symptomatic Patients

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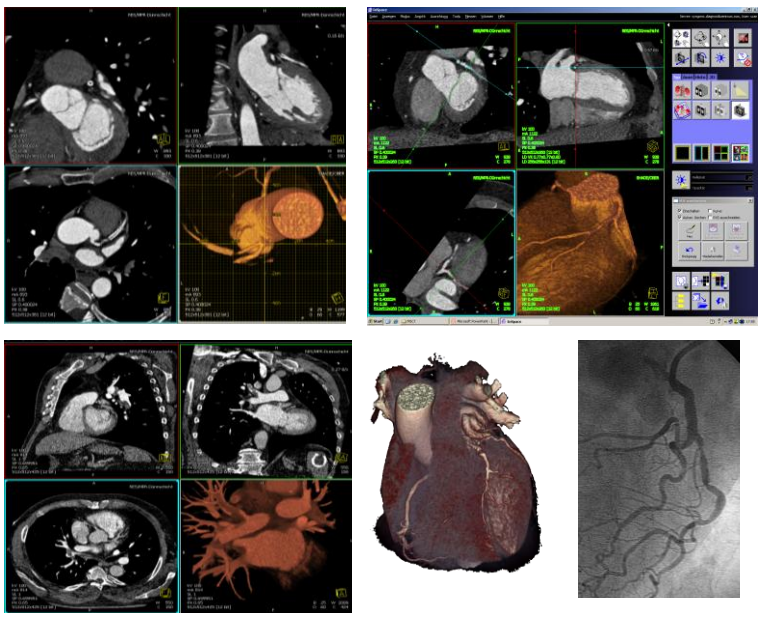
Objectives/Background: In patients with heart rates <60/min, multislice coronary computed tomography is associated with a high diagnostic accuracy for the exclusion and assessment of coronary artery stenoses. However radiaton exposure, especially in triple rule out (TPO) scans are a cause of concern. The objective of this prospective evaluation was to test the diagnostic accuracy and efficiency of a new high-pitch dual-source computed tomography in non-selected symptomatic patients for the diagnosis of significant coronary stenosis, pulmonary embolism or aortic dissection (TPO).

Methods: We evaluated 72 consecutive chest pain patients from our emergency department/cardiac outpatient clinic with a low to intermediate likelihood of coronary disease including patients with a previous stentimplantation, patients with heart rates > 60/min or with atrial fibrillation. CT was performed using a dual-source CT system with 2 x 128 x 0.6 mm collimation, 0.28 s rotation time and temporal resolution of 75ms. Invasive coronary angiography (ICA) was performed in patients with significant stenosis (> 50%) on CTCA.



Results: In 70 patients (98%) imaging was successful with diagnostic image quality for a triple-rule-out evaluation. Of 1008 coronary artery segments, 28 (3%) were uninterpretable in 3 patients. In 39 patients **(56%) CTA could exclude a significant coronary artery stenosis** but diagnosed pulmonary embolism in 2 pts. ICA was performed in 31 Patients (54%) and analysed 434 coronary artery segments. ICA served as golden standard. In a vessel-based analysis, sensitivity, specificity, positive predictive value, and negative predictive values of CTA were 97%, 98%, 93%, and 99%, respectively. **The effective radiation dose was 3.5 ± 2 mSv**.

Conclusion: In real life symptomatic patients, high-pitch spiral coronary CTA provides excellent image quality to diagnose significant coronary artery stenosis at a consistent low radiation dose.

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