0.3MSV CORONARIES - INITIAL EXPERIENCE WITH AN ULTRA LOW DOSE SCAN PROTOCOL USING A 128-SLICE DUAL SOURCE CT SCANNER

ACC Poster Contributions
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Authors: Kheng Thye Ho, Christoph Panknin, Kia Chong Chua, Tan Tock Seng Hospital, Singapore, Singapore

Background: Radiation doses below 1mSv for coronary imaging became routinely available with the introduction of dual source, high pitch spiral CT scanning (Flash). We evaluated a scan mode that was further optimized to yield doses well below 0.5mSv for diagnostic quality and patient dose as well as its limitations.

Methods: We configured the Flash scan mode to apply a tube current of 80kV instead of the 100kV to 120kV used routinely.

22 patients (56±7 years, BMI 21.5±2.6 kg/m2, 17 female) referred for coronary imaging, whose body weight was below 60kg (53±5kg), were scanned on the Somatom Definition Flash, Siemens Healthcare, Germany, using the 80kV Flash mode.

22 patients with a body weight above 60 kg (68±7kg) were scanned with the routine 100kV Flash scan mode.

All patients were administered beta blockers to reduce the heart rate to below 65 bpm.

Scans were evaluated for diagnostic image quality, iodine contrast, image noise, and patient dose.

Results: All scans were deemed to be of diagnostic quality for clinical patient management with confident reading by 2 experienced readers.

Iodine contrast in the ascending aorta was 1138±169HU in the 80kV Flash scans, and 651±126HU in the 100kV scans.

Image noise, measured as the standard deviation in the ascending aorta, was 71±23 HU and 39±11 HU, respectively.

The effective dose was 0.32±0.09 mSv for the 80kV and 0.84±0.06 mSv for the 100kV Flash scans.

Conclusion: 80kV Flash scanning yielded consistent diagnostic quality imaging of coronaries at a mean dose of 0.32mSv. The increased noise in the low dose 80kV images is counteracted by improved iodine contrast. The 80kV scan mode offers considerable dose savings for coronary CTA in pediatric patients and adults of slender build.