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ASSESSMENT OF CORONARY ARTERY IN-STENT PATENCY BY FLASH-DSCT VERSUS CORONARY ARTERY ANGIOGRAPHY

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Objectives Coronary computed tomographic modality sheds more light on radiation reduction while maintaining image quality. The aim of this study was to evaluate the performance of second-generation dual source coronary CT scanner with prospective electrocardiographically triggered high-pitch spiral acquisition (FLASH-DSCT) in the detection of in-stent restenosis (＞50% luminal narrowing) in symptomatic patients referred for conventional coronary angiography (CCA).

Methods 62 patients/107 stents with chest discomfort were prospectively evaluated after coronary stenting. Before CCA, FLASH-CT was performed by using a second generation, dual-source CT scanner (Definition Flash; Siemens Healthcare, Forchheim, Germany) between September 2011 and March 2012.

Results Average heart rate (HR) was 58±7 bpm, and average effective dose (ED) was 1.61±0.62 mSv. The interval between stenting and inclusion in the study was 31±40 months. Of the 107 stents, 96 (89.7%) could be assessed and 11 (10.3%) were excluded due to unqualified image quality. 27/107 (25.2%) stents had angiographically proven restenosis, and 46/107 (43%) stents mild late loss. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of FLASH-DSCT, calculated in all stents, were 95%, 93%, 76% and 98%, respectively. In stents ≥3.5 mm (n=42), sensitivity, specificity, PPV, NPV were 100%; in 3 mm stents (n=39), sensitivity and NPV were 100%, specificity 97%, PPV 95%; in stents ≤2.75 mm (n=26), sensitivity was 88%, specificity 66%, PPV 59%, NPV 90%. Five stents ≤2.5 mm were indiscernible.

Conclusions It can be performed well in the detection of in-stent patency by FLASH-DSCT. In spite of frequent false positive findings in smaller stents (≤2.75 mm), FLASH-DSCT can reliably distinguishes in-stent restenosis irrespective of stent size.