Summary / Zusammenfassung
The aim of this study was to compare image quality characteristics from 64-slice high definition (HDCT) versus 64-slice standard definition CT (SDCT) for coronary stent imaging. In twenty-five stents of 14 patients, undergoing contrast-enhanced CCTA both on 64-slice SDCT (LightSpeedVCT, GE Healthcare) and HDCT (Discovery HD750, GE Healthcare), radiation dose, contrast, noise and stent characteristics were assessed. Two blinded observers graded stent image quality (score 1 = no, 2 = mild, 3 = moderate, and 4 = severe artefacts). All scans were reconstructed with increasing contributions of adaptive statistical iterative reconstruction (ASIR) blending (0, 20, 40, 60, 80 and 100 %). Image quality was significantly superior in HDCT versus SDCT (score 1.7 ± 0.5 vs. 2.7 ± 0.7; p < 0.05). Image noise was significantly higher in HDCT compared to SDCT irrespective of ASIR contributions (p < 0.05). Addition of 40 % ASIR or more reduced image noise significantly in both HDCT and SDCT. In HDCT in-stent luminal attenuation was significantly lower and mean measured in-stent luminal diameter was significantly larger (1.2 ± 0.4 mm vs. 0.8 ± 0.4 mm; p < 0.05) compared to SDCT. Radiation dose from HDCT was comparable to SDCT (1.8 ± 0.7 mSv vs. 1.7 ± 0.7 mSv; p = ns). Use of HDCT for coronary stent imaging reduces partial volume artefacts from stents yielding improved image quality versus SDCT at a comparable radiation dose.


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