Attenuation correction maps for SPECT myocardial perfusion imaging from contrast-enhanced coronary CT angiography: gemstone spectral imaging with single-source dual energy and material decomposition.

Summary / Zusammenfassung
The aim of this study was to explore the feasibility of attenuation correction (AC) of myocardial perfusion imaging (MPI) with a virtual unenhanced cardiac CT scan synthesized from contrast-enhanced single-source dual-energy coronary CT angiography.

METHODS: Segmental myocardial percentage uptake values obtained with AC were analyzed by use of correlation analysis and Bland-Altman limits of agreement (20-segment model), and clinical agreement was evaluated in 30 patients.

RESULTS: The 2 methods showed an excellent correlation for segmental myocardial percentage uptake at stress ($r = 0.93; P < 0.001$; low dose) and at rest ($r = 0.90; P < 0.001$; high dose) with narrow Bland-Altman limits of agreement (-6.8% to 7.8% and -7.8% to 7.4%, respectively). The levels of clinical agreement of SPECT MPI corrected with standard versus virtual unenhanced CT AC were 99% per coronary territory and 97% per patient.

CONCLUSION: Our results suggest that AC of SPECT MPI with a virtual unenhanced CT scan synthesized from contrast-enhanced coronary CT angiography is feasible and reliable.

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