Routine chest and abdominal high-pitch CT: an alternative low dose protocol with preserved image quality

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OBJECTIVE
To investigate the radiation dose and image quality of the high-pitch dual source computer tomography (DSCT) for routine chest and abdominal scans.

METHODS
130 consecutive patients (62 female, 68 male, median age 55 years) were included. All patients underwent 128-slice high-pitch DSCT (chest n=99; abdomen n=84) at a pitch of 3.2. Two observers independently rated image quality using a 4-point score (1: excellent to 4: non-diagnostic). Image noise was measured and operational radiation dose quantities were recorded. An additional group of 132 patients (chest, n=80; abdomen n=52) scanned with standard-pitch CT matched for age, gender, and body mass index (BMI) served as control group.

RESULTS
Interobserver agreement for image quality rating was good (k=0.74). Subjective image quality of high-pitch CT was diagnostic in all patients (median score chest; 2, median score abdomen: 2). Image noise of high-pitch CT was comparable to standard-pitch for the chest (p=0.32) but increased in the abdomen (p<0.0001). For high-pitch CT radiation dose was 4.4±0.9 mSv (chest) and 6.5±1.2 mSv (abdomen). These values were significantly lower compared to standard-pitch CT (chest: 5.5±1.2 mSv; abdomen: 11.3±3.8 mSv).

CONCLUSION
Based on the technical background high-pitch dual source CT may serve as an alternative scan mode for low radiation dose routine chest and abdominal CT.

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