

Comparative assessment of image quality for coronary CT angiography with iobitridol and two contrast agents with higher iodine concentrations: iopromide and iomeprol. A multicentre randomized double-blind trial

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OBJECTIVES

To demonstrate non-inferiority of iobitridol 350 for coronary CT angiography (CTA) compared to higher iodine content contrast media regarding rate of patients evaluable for the presence of coronary artery stenoses.

METHODS

In this multicentre trial, 452 patients were randomized to receive iobitridol 350, iopromide 370 or iomeprol 400 and underwent coronary CTA using CT systems with 64-detector rows or more. Two core lab readers assessed 18 coronary segments per patient regarding image quality (score 0 = non diagnostic to 4 = excellent quality), vascular attenuation, signal and contrast to noise ratio (SNR, CNR). Patients were considered evaluable if no segment had a score of 0.

RESULTS

Per-patient, the rate of fully evaluable CT scans was 92.1, 95.4 and 94.6 % for iobitridol, iopromide and iomeprol, respectively. Non-inferiority of iobitridol over the best comparator was demonstrated with a 95 % CI of the difference of [-8.8 to 2.1], with a pre-specified non-inferiority margin of -10 %. Although average attenuation increased with higher iodine concentrations, average SNR and CNR did not differ between groups.

CONCLUSIONS

With current CT technology, iobitridol 350 mg iodine/ml is not inferior to contrast media with higher iodine concentrations in terms of image quality for coronary stenosis assessment.

KEY POINTS

- Iodine concentration is an important parameter for image quality in coronary CTA.
- Contrast enhancement must be balanced against the amount of iodine injected.
- Iobitridol 350 is non-inferior compared to CM with higher iodine concentrations.
- Higher attenuation with higher iodine concentrations, but no SNR or CNR differences.

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