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CT angiography and perfusion to assess coronary artery disease: The CORE320 study

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A non-invasive imaging strategy which integrates non-invasive CT angiography (CTA) and CT myocardial perfusion imaging (CTP) has robust diagnostic accuracy for identifying patients with flow-limiting coronary artery disease in need of myocardial revascularisation, according to results of the CORE320 study presented here today by Dr Joao AC Lima from Johns Hopkins Hospital, Baltimore, USA.

The CORE320 study is a prospective multicentre international trial which evaluated the diagnostic accuracy of combined non-invasive CTA and CTP as compared with invasive angiography (ICA) and single photon computed tomography myocardial perfusion imaging (SPECT-MPI). The primary objective was to determine whether combined noninvasive CTA and CTP could reliably determine the presence or absence of flow limiting coronary stenoses as defined by the combination of ICA and SPECT-MPI.

Patients between 45 and 85 years of age with suspected or known coronary artery disease and clinically referred for ICA were eligible for participation. The study enrolled 436 patients, of whom 381 successfully completed all imaging at 16 centers in eight countries (Canada, USA, Brazil, the Netherlands, Germany, Denmark, Japan, and Singapore).

The study design included four imaging components: CTA, stress CTP, ICA, and SPECT-MPI, as displayed in the Figure below. Images were evaluated in double blinded core laboratories. The area under the receiver operating characteristic curve (AUC) was used as the primary

diagnostic parameter. The study was sponsored by Toshiba Medical Systems.

Sixty-six percent of the study participants were male, the median (interquartile range [IQR]) age was 62 [56,68], body mass index 27 [24,30], and Agatston calcium score 162 [9, 530]. Participants had a history of traditional risk factors for coronary artery disease - 34% were diabetic, 26% had a history of previous myocardial infarction, 29% had prior percutaneous coronary intervention, 78% were positive for hypertension, 68% were positive for dislipidemia, and 45% had a family history of coronary artery disease.

The prevalence of obstructive coronary artery disease defined by combined ICA and SPECT/MPI was 38% and for ICA alone 59%. The patient-based diagnostic accuracy (AUC) of combined CTA and CTP for detecting or excluding flow-limiting CAD was 0.87 (95% CI 0.83-0.91), and 0.89 (95% CI 0.86-0.93) when the ICA stenosis reference standards were ≥50% and ≥70% respectively. CTP increased the diagnostic accuracy of CTA alone to delineate flow-limiting disease (AUC 0.87 [95%CI 0.83-0.91] vs. 0.81 [95%CI 0.77-0.86], respectively, p

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