ASSESSMENT OF CORONARY ARTERIAL LESION SEVERITY BY CT ANGIOGRAPHY FOR DETECTING CORONARY ARTERY DISEASE ASSOCIATED WITH MYOCARDIAL PERFUSION ABNORMALITIES BY SPECT: INSIGHTS FROM THE CORE320 MULTICENTER STUDY

Poster Contributions
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Background: The relationship between coronary arterial lesion severity by CT angiography (CTA) and myocardial perfusion abnormalities is generally modest. We hypothesized that this relationship can be improved in selected cases of vessels without diffuse disease or long lesions.

Methods: We included 349 patients without left main disease enrolled in the CORE320 multicenter study for this analysis. A total of 864 nonstented vessels were analyzed by CTA for coronary stenosis severity on a continuous scale (30-100%) and for corresponding myocardial perfusion abnormalities by nuclear stress perfusion (SPECT). Vessels with a sum stress score of ≥1 by SPECT were considered positive for myocardial ischemia. Coronary arteries with no more than one lesion with ≥ 30% diameter stenosis, as well as vessels with no more than one lesion with ≥ 50% diameter stenosis were separately analyzed for comparison. In addition, vessels with no more than one lesion with ≥ 50% diameter stenosis of less than 20 mm length were examined. Area under the receiver-operating characteristic curve (AUC) was used as measure of diagnostic accuracy.

Results: Of 864 vessels, 276 (32%) had associated perfusion abnormalities by SPECT. The AUC for CTA vs. SPECT in all 864 vessels was 0.66 with sensitivity of 0.59 and specificity of 0.62 for a 50% stenosis threshold and 0.42 and 0.88 for a 70% diameter stenosis. After excluding vessels with more than one 50% lesions (n=709) by CTA, the per-vessel AUC rose from 0.56 to 0.73 (p=0.002) and to 0.51 vs. 0.74 (p<0.001) including vessels with no more than one lesion with ≥ 50% diameter stenosis of less than 20 mm length were examined. Area under the receiver-operating characteristic curve (AUC) was used as measure of diagnostic accuracy.

Conclusions: The accuracy of coronary lesion severity by CT for detecting atherosclerotic disease associated with myocardial perfusion abnormalities by SPECT is better in vessels without diffuse disease and without long lesions. However, the overall accuracy remained modest.