Quantitative Coronary Computed Tomography Angiography Assessment for Differentiating between Total Occlusions and Severe Stenoses

C-08

Shinichiro Masuda[1], Kotaro Miyashita[2], Yoshinobu Onuma[2], Patrick Serruys[2]

[1]Ageo Central General Hospital, [2]University of Galway

Backgrounds: The impact of quantitative assessment to differentiate total occlusions (TOs) from severe stenoses on coronary computed tomography angiography (CCTA) remains unclear.**Objective**: To evaluate whether quantitative CCTA characteristics can distinguish TOs from severe stenoses on invasive coronary angiography (ICA).**Methods**: In this FASTTRACK CABG (NCT04142021) sub-analysis, patients underwent both CCTA and ICA. Semi-automated plaque-analysis software was used for quantitative assessment. Blinded analysts compared TOs on CCTA, defined as complete lack of contrast opacification, with corresponding ICA findings.**Results**: CCTA identified 84 TOs in 59 of 114 patients. Concordance between ICA and CCTA for TO diagnosis was 56.0% (n = 47). TOs had significantly longer lesions than severe stenoses (25.1 ± 23.0 mm vs. 9.4 ± 11.2 mm, $P < 0.001$). A 5.5 mm lesion length was the best cut-off (AUC 0.77, 95% CI: 0.66 to 0.87), with 91.1% sensitivity and 61.1% specificity. Dense calcium PAV was higher in TOs (18.7 ± 19.6% vs. 6.6 ± 13.0%, $P < 0.001$), whereas fibro-fatty PAV was lower (19.5 ± 10.5% vs. 31.3 ± 14.2%, $P < 0.001$). On multivariable analysis, only lesion length >5.5 mm independently differentiated TOs from severe stenoses.**Conclusion**: Lesion length >5.5 mm was the only independent quantitative CCTA predictor distinguishing TOs from severe stenoses.