Conclusions: Our study generates hypothesis that HR influences FFR in LAD, suggesting the necessity for clinical validation and algorithm correction. Although the model of FFR-HR dependency developed during the study is ready to implement in existing FFR modalities.

TCT-335
Influence of the amount of myocardium subtended by an intermediate coronary artery stenosis on FFR and iFR
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Background: Fractional Flow Reserve (FFR) has been shown to be related to the amount of myocardium subtended by a coronary stenosis; this has never been shown for the instantaneous wave-free pressure ratio (iFR). In addition, myocardial blood flow during the wave-free period has been shown to be nearly the same of that measured during adenosine induced maximal hyperemia, but it is still not clear whether this equivalence is also depending of the amount of myocardium subtended to the coronary stenoses.

Methods: Consecutive patients with at least one equivocal stenosis in one major coronary artery were enrolled. Both FFR, iFR and iFR with adenosine administration (iFRA) were measured. Δ%iFR was defined as the difference in percentage of Pa/Pd ratio assessed during conventional iFR measurement and iFR measurement during intra-venous adenosine infusion (iFRA). The amount of jeopardized myocardium was evaluated using the Duke Jeopardy Score (DJS). Two-dimensional quantitative coronary angiography (QCA) was used to assess the angiographic features of the coronary stenosis and both reference diameter (RD) and minimal lumen diameter (MLD) were calculated.

Results: We evaluated 42 intermediate coronary artery stenoses in 38 patients. Both FFR, iFR and iFRA were inversely correlated with DJS/MLD ratio (respectively, r2 = 0.32, p < 0.001, r2 = 0.53, p < 0.001, and r2 = 0.64, p < 0.001). Moreover, the Δ%iFR was significantly correlated with the DJS/MLD ratio (r2 = 0.22, p = 0.03), suggesting that myocardial residual cannot be considered negligible during the wave-free period particularly in larger territories. Of note, DJS/MLD ratio had higher accuracy in predicting FFR value (ROC analysis: 0.89 [0.79-1.00], p < 0.001). Conclusions: Both FFR and iFR are related to the amount of myocardium subtend by a coronary artery stenosis and DJS/MLD ratio can reliably predict a positive FFR value. In addition, because of the not negligible resistance during the wave-free period, iFR should not be used for the assessment of coronary stenosis subtending larger myocardial territories.

TCT-326
Utility of Fractional Flow Reserve Assessment in Aortic Stenosis
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Background: Assessment of the significance of coronary stenosis in patients undergoing aortic valve replacement is important as concomitant revascularization increases procedural mortality risk. Fractional flow reserve (FFR) is an essential tool for evaluating the functional significance of coronary artery stenosis that has been validated in patients without valvular disease. Its diagnostic utility has not been assessed in patients with symptomatic aortic stenosis (AS).

Methods: We retrospectively analyzed all patients with moderate to severe AS from July 1, 2005 to October 31, 2013 who underwent coronary angiography and FFR assessment at our institution. Clinical, echocardiographic, hemodynamic, and angiographic data were collected. Patients were stratified by the hemodynamic significance of their coronary artery disease (FFR > 0.8). Longitudinal follow up was performed to determine the primary outcomes of death, myocardial infarction (MI), target lesion revascularization (TLR), or its combination (MACE).

Results: Patients (n = 54) with moderate to severe AS (mean aortic valve area 0.88±0.23 cm2, mean gradient of 32±14 mmHg) underwent FFR assessment of 76 coronary lesions. The mean angiographic severity was 64%. Mean duration of follow-up was 853 days. Of the lesions that underwent FFR assessment, 13(17.1%) lesions were treated with percutaneous intervention, 23(30.3%) were bypassed during cardiac surgery, and 40(52.6%) were treated medically. There was no difference between MACE or individual outcomes between lesions with an FFR<0.80 versus FFR>0.80: MACE 27.9% x 33.3% p = 0.610, TLR 7.0% x 0.0% p = 0.122, MI 9.3% x 15.2% p = 0.434, Death 20.9% x 27.3% p = 0.519. Utilization of a cutoff of >0.80 for medical management had a negative predictive value of 100% [95%CI 89.32%-100.00%] for freedom from TLR. Furthermore, there was no correlation in FFR result with severity of AS (p = 0.730), even after adjusting for the degree of angiographic severity (p = 0.530).

Conclusions: FFR can be utilized to diagnose hemodynamic significance of coronary artery disease in patients with moderate and severe AS. There appears to be no influence of the severity of AS on FFR results nor on clinical outcomes.