**TCT-315**

Invasively Derived Coronary Flow Capacity: Prognostic Implications of a Cross-modality Physiological Concept

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Background: Either coronary flow reserve (CFR) or fractional flow reserve (FFR) can suffice for diagnosis of significant coronary stenoses, but they can over- or under-estimate severity in many cases. An alternative approach to the coronary flow capacity (CFC) concept, originally derived from PET-imaging, which integrates CFR and hyperemic flow (hAPV) to depict the ischemic burden of the myocardium. We studied the prognostic implications of addition of hAPV to CFR within the CFC concept derived from invasive measurements.

Methods: Coronary pressure and flow velocity were measured in 154 patients in whom revascularization was deferred in the pre-FAME era. The additive value of hAPV to CFR was tested with the net reclassification index (NRI) and relative IDI. After stratification in normal, mildly reduced, moderately reduced, and severely reduced CFC, using literature-derived CFR cut-offs and the corresponding hAPV cutoffs, the corresponding NRI and IDI were computed.

Results: Median follow-up was 11.9 years (10.0–13.4 years). CFR was significantly associated with MACE (p = 0.001). The addition of hAPV to CFR yielded an NRI of 0.49 (95% CI: 0.26–0.72), IDI of 0.024 (SE 0.012, p = 0.04), whereas hyperemic Tmn showed no correlation with the incidence of MACE (p = 0.37). Results from a Cox proportional hazards model were: Comorbidities, including diabetes, hypertension, heart failure, and renal dysfunction, were significant risk factors for the outcome. CFR was associated with MACE (p = 0.001), p = 0.0001), and smokers (63.7% vs. 42.3%; p < 0.0001), and smokers (63.7% vs. 42.3%; p < 0.0001). Initial presentation was more frequently acute coronary syndrome syndrome (36.7% vs. 29.1%) or non-specific chest pain (46% vs. 21.9%). The rate of complications after PT was 0.9% (n = 23). Complications included delayed or persistant CAS (0.3%), VF/ventricular fibrillation, and acute aortic ventricular block.

Conclusion: Small coronary size may increase resting coronary flow, reducing CFR even in the absence of epicardial stenosis and microvascular dysfunction. Potential impact of artery size should be noted in interpretation of physiologic indices including resting flow status.

**TCT-317**

Systematic detection of coronary vasospasm by methylergonovine-based provocative test in 2,397 patients

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Background: In the absence of clear-cut indications for provocative test (PT), coronary artery spasm (CAS) may be underdiagnosed whereas the widespread use of early coronary angiography has found that acute ischemic syndromes are not always related to atherothrombosis. The objective of the present study was to evaluate the incidence of CAS in a population of patients with chest pain who underwent methylergonovine-based PT.

Methods: The present study is a retrospective analysis from an University tertiary care hospital where a policy of systematic detection of CAS by PT is applied in patients with chest pain at rest and without significant coronary stenosis. PT complications include death, MI, stroke, delayed or persistent CAS, ventricular fibrillation, and acute aortic ventricular block.

Results: During a 10-year period (2002-2012), a total of 18,454 angiographies were performed. CAS was documented in 256 (10.7%) of the 2,397 patients with normal or near normal coronary arteries and chest pain who underwent PT. Compared to the overall population, CAS patients were more often female (44.7% vs. 29.6%; p < 0.0001), younger (55 [47.5-64] years vs. 61 [52-70] years; p = 0.0001), and smokers (63.7% vs. 42.3%; p < 0.0001). Initial presentation was more frequently acute coronary syndrome syndrome (36.7% vs. 29.1%) or non-specific chest pain (46% vs. 21.9%). The rate of complications after PT was 0.9% (n = 23). Complications included delayed or persistent CAS (0.3%), VF/ventricular fibrillation, and acute ischemic attack (0.2%), and non Q wave MI (0.04%). Urgent coronary stenting was required to restore arterial patency in three patients with persistent CAS.

Conclusion: This retrospective study of 10 years of experience suggests that CAS is present in 10.7% of patients with myocardial ischemia symptoms at rest and without significant coronary stenosis. Methylergonovine based PT appear to be extremely safe when performed in selected patients with normal or near normal coronary arteries. These findings could justify performing PT more systematically in this setting to avoid the potentially severe outcomes of undiagnosed CAS.

**TCT-318**

Trans-lesional FFRct gradient correlates with measured FFR gradient in vessels with serial coronary stenoses: role in stenting strategy

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Background: Fractional flow reserve derived from coronary CT (FFRct) has high diagnostic accuracy compared to FFRcath, and modulation of the FFRct with “virtual