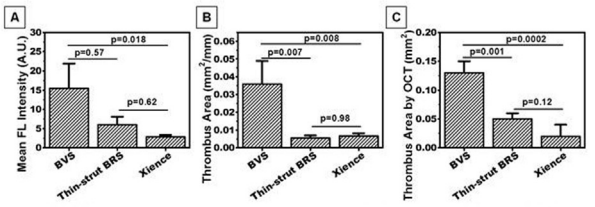

Figure 1: Mean immunofluorescence intensity (A) and thrombus area (B) quantified on immunofluorescence images of the samples. (C): Mean cross-sectional thrombus area was quantified from OCT pullback analysis of samples.

CONCLUSION In-vitro perfusion models suggest that strut thickness may impact on BRS thrombogenicity.

CATEGORIES CORONARY: Bioresorbable Vascular Scaffolds

CORONARY PHYSIOLOGY AFTER PCI

Abstract nos: 133 - 137

TCT-133

Clinical Impact of Persistent Microvascular Obstruction Following Successful Percutaneous Coronary Intervention in Acute ST segment Elevation Myocardial Infarction

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BACKGROUND In the contemporary era of primary percutaneous coronary intervention (PPCI) to treat acute ST segment elevation myocardial infarction (STEMI), the frequency and predictors of persistent microvascular obstruction (MVO) have not been elucidated. Real time myocardial contrast echocardiography (RTMCE) can be utilized to detect both the presence and extent of MVO in this setting. The goal of this study was to assess MVO frequency and severity in the current era, and how it affects outcome.

METHODS 170 consecutive patients receiving successful emergent PPCI for STEMI (TIMI grade 2/3 flow) were examined with RTMCE within 24-48 hours of PPCI. RTMCE was performed with a continuous infusion or slow bolus of intravenous commercially available ultrasound contrast media and brief high mechanical index impulses to examine for both delayed microvascular replenishment and abnormal plateau intensity within the infarct zone (IZ). Patients were divided into 3 groups: Group 1 with normal microvascular flow (MVF) within the IZ, Group 2 with delayed replenishment but normal plateau intensity, and Group 3 both delayed replenishment and abnormal plateau intensity (MVO). Clinical and angiographic predictors of persistent MVO were determined using Odds Ratios (OR). Event free survival (EFS) from death, heart failure, recurrent infarction, and defibrillator placement was determined by Kaplan Meier estimates.

RESULTS Mean age was 59±12 years (79% male). Prevalence of hypertension, hyperlipidemia, DM, smoking, history of MI and door to balloon times were not different between groups, but 37% had normal MVF (Group I), 29% had only delayed replenishment (Group 2), and 35% patients had MVO (Group 3). Age (OR 1.2;CI 1.1-1.4) and LAD infarct (OR 7.3;CI 3.6-15.6) were independent predictors of MVO. One year event rates were 27% in Group 3 compared to 8% in Group 1 and Group 2. The presence of MVO was associated with significantly lower EFS when compared to Group I and II patients (p=0.008).

CONCLUSION In the contemporary era of successful PPCI for STEMI, MVO persists in over one third of the patients, especially following LAD infarction. The presence of MVO by RTMCE identifies patients at highest risk for adverse outcomes.

CATEGORIES IMAGING: Imaging: Non-Invasive

TCT-134

Impact of post-percutaneous coronary intervention fractional flow reserve measurement on procedural management and clinical outcomes: the REPEAT-FFR Study

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BACKGROUND The role of fractional flow reserve (FFR) evaluation after percutaneous coronary intervention (PCI) has received little scrutiny. We aimed to evaluate the impact of post-PCI FFR in a prospective study.

METHODS Single-center prospective registry of patients (n=65) undergoing PCI for stable coronary artery disease (CAD) or non-ST-elevation acute coronary syndrome (ACS). Baseline and post-PCI FFR were measured with the Acist Navvus Rapid Exchange FFR Microcatheter (ACIST Medical Systems, Eden Prairie, MN). Patients were divided according to the post-PCI FFR value (<0.90 vs. ≥0.90). The primary endpoint was the proportion of cases in which an action was undertaken in light of a post-PCI FFR value <0.90. The secondary endpoints were clinical outcomes at 30 days and 1 year. Target-vessel failure (TVF) was defined as a composite of cardiac death, target-vessel myocardial infarction, and ischemia-driven target-vessel revascularization.

RESULTS Overall mean age was 68.9±6.3, 32% were diabetics. Ejection fraction was 51.8±10.0%. The majority of procedures were indicated for stable CAD (66%). SYNTAX score was 13.9±7.9. There were no differences in baseline clinical and angiographic characteristics between patients with post-PCI FFR <0.90 (n=43) and those with post-PCI FFR ≥0.90 (n=22), with the exception of a higher prevalence of left anterior descending as target vessel in post-PCI FFR <0.90 (84% vs. 59%, p=0.03). Baseline FFR was 0.72±0.08 in post-PCI FFR <0.90 vs. 0.69±0.14 in post-PCI FFR ≥0.90 (p=0.40). Overall, 86% received a drug-eluting stent, 6% a bioresorbable scaffold, and 8% a drug-eluting balloon (DEB) (p=0.25). Total stent length was 37.9±25.4 mm (1.5±1.0 implanted stents), with no difference between groups. Post-PCI FFR was 0.82±0.05 in post-PCI FFR <0.90 vs. 0.94±0.02 in post-PCI FFR ≥0.90 (p<0.001). The reasons for an FFR <0.90 were: residual distal disease not amenable to treatment (42%), residual uncovered distal (2%) and proximal plaques (14%), stent underexpansion (2%), edge dissection (2%), unknown (37%). An action was undertaken in 15/43 (35%) of patients with a post-PCI FFR <0.90: invasive imaging 19%, further stenting 26%, further post-dilatation 28%, treatment of distal vessel with a DEB 2%. In only 3/15 patients (20%) that had an FFR <0.90 after PCI, additional interventions (stenting of residual uncovered proximal plaques in all three) achieved an increase of the FFR value to ≥0.90. A statistically significant (p=0.02), albeit of little clinical relevance (0.02±0.05), increase in FFR value was observed in patients who had a post-PCI FFR <0.90. Final FFR was 0.83±0.05 in post-PCI FFR <0.90 vs. 0.94±0.02 in post-PCI FFR ≥0.90 (p<0.001). At 30 days, no TVF events were recorded. However, one patient with a final FFR <0.90 (2.6%) was admitted for chest pain (p=0.43). There was no difference in angina class between the two groups. One year follow-up is in progress.

CONCLUSION Two thirds of patients present a post-PCI FFR <0.90. This is due to a variety of reasons, often not amenable to percutaneous treatment or of unclear etiology. Further interventions (performed in about one third of cases) do not appear to have a substantial impact on final FFR. Further larger studies should assess the clinical impact of our findings.

CATEGORIES IMAGING: FFR and Physiologic Lesion Assessment

TCT-135

The index of microvascular resistance as a surrogate for myocardial infarct extension and microvascular obstruction in patients with ST elevation myocardial infarction treated by primary angioplasty

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BACKGROUND The index of microcirculatory resistance (IMR) is an invasive surrogate of coronary microvascular function and and an early marker of cardiac recovery, after acute ST elevation myocardial infarction (STEMI), as evaluated by echocardiography. Our purpose in the current study was to confirm its relation with infarct extension (IE) and microvascular obstruction (MVO), measured by several