coronary tree. A novel prototypic computational model including an estimation of personalized boundary conditions was used for flow calculation to derive FFRangio based on angiographic anatomy, heart rate and blood pressure.

**Results:** Of 52 coronary lesions (LAD: 38, LCX: 6, RCA: 8), 12 were hemodynamically significant (FFRinvasive < 0.80). FFRangio identified these lesions with an accuracy of 90%, specificity of 98%, positive predictive value of 89%, and negative predictive value of 91%. Correlation between FFRinvasive (mean: 0.84 ± 0.12) and FFRangio (mean: 0.861 ± 0.09) was r = 0.82 (see fig. 1).

**Conclusions:** Model-based determination of coronary FFR based on invasive angiography has a high diagnostic accuracy when compared to invasive FFR. Further research will be performed to refine models and obtain further verification of the method.

**TCT-336**

Deferral Versus Performance of Coronary Intervention Based on Coronary Pressure-Derived Fractional Flow Reserve: Systematic Review and Meta-analysis

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**Background:** Fractional flow reserve (FFR) has been proposed as the gold standard to assess functional severity of coronary artery stenosis and to stratify which lesions should be subjected to coronary intervention (PCI). Our aim was to determine the safety of using FFR as a decision-making tool for deferral or performance of PCI, based on data from published studies.

**Methods:** Systematic review by independent researchers was performed in PubMed and EMBASE including papers indexed until October 11th 2013 that used FFR (0.75 or 0.80) to determine in which lesions PCI should be performed or deferred. Outcomes of interest were death, myocardial infarction (AMI) and new revascularization (RV). Comprehensive Meta Analysis was used to pool study results and for meta-regression.

**Results:** After peer review, 60 abstracts remained and 19 papers (12 observational studies and 7 randomized-controlled trials) were included for analysis, totaling 3,097 patients (3,796 lesions). Nine papers had two arms (PCI and Defer) and 10 had only the Defer arm; FFR cut-off was 0.75 in 15 studies, and 0.80 in 4. Weighted mean follow-up time was 21.2 months (6.9 to 53). In indirect comparisons, PCI and Defer groups had similar death: 2.2% (CFR95% 0.9-5.1%, I2 = 72.7) vs 2.0% (CFR95% 0.9-5.5%, I2 = 40.5), p = 0.86, and AMI rates: 1.9% (0.8-4.0%, I2 = 0) vs 1.9% (1.3-3.1%, I2 = 49.8), p = 1.00. RV rates were higher in the PCI group: 14.0% (8.0-23.2%, I2 = 87.8) x 4.4% (8.8-6.9%, I2 = 58.9), p = 0.002. Direct comparisons, including two-arm trials, also showed no differences in death: OR = 1.86 (0.81-4.27, I2 = 11.5; p = 0.14) and AMI rates: OR = 0.75 (0.21-2.69, I2 = 47.1; p = 0.66); RV rates were again higher in the PCI group: OR = 3.10 (1.25-7.70, I2 = 72; p = 0.015). Meta-regression suggests influence of the proportion men on the RV rates (β = 0.058, p = 0.026). No other co-factors (age, hypertension, diabetes, FFR cut-off) influenced the outcomes.

**Conclusions:** Based on pooled data, FFR seems to be a safe and useful tool to determine lesions to be treated. Higher RV rates were observed in the PCI groups, speculatively related to restenosis. This data, however, should be parsimoniously interpreted, given the considerable heterogeneity of the studies published so far.

**TCT-337**

Quantitative assessment of microcirculatory resistance in infarct-related and non-infarct-related coronary arteries in patients with ST-segment elevation myocardial infarction treated with primary percutaneous coronary intervention

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**Background:** It has been shown that index of microcirculatory resistance (IMR) in infarct-related artery is an predictor of infarct size and recovery of left ventricular function in patients with ST-segment elevation myocardial infarction (STEMI) treated by primary percutaneous coronary intervention (PCI). However, microcirculatory resistance in non-infarct-related arteries remains unknown in patients with STEMI.

**Methods:** In order to quantitatively assess microcirculatory resistance in infarct and non-infarct territories, we determined IMR in infarct-related and non-infarct-related coronary arteries with no critical stenosis (diameter stenosis < 70% in non-infarct-related arteries) in 70 patients with the first STEMI treated with primary PCI. Coronary wedge pressure was measured in infarct-related artery and used for the calculation of corrected IMR.

**Results:** The IMR in infarct-related artery was significantly increased as compared with IMR in non-infarct-related arteries: median 32.5 U (range 7.4 to 162.1) vs. 20.3 U (range 7.9 to 49.9; P < 0.001) in an adjacent vessel and 32.5 vs. 22.6 (range 5.9 to 105.1; P = 0.0022) in artery giving collateral blood supply to the infarct-related artery. Corrected IMR was also increased compared to IMR in non-infarct-related arteries: 29.9 U (range 10.3 to 112.2) vs. 20.3 U; P = 0.001 and 29.9 vs. 22.6 U; P = 0.0047. The IMR values in the adjacent vessel and vessel giving collateral blood supply to infarct-related artery were similar (20.3 vs 22.6 U; P = 0.32).

**Conclusions:** Microcirculatory resistance is elevated in the territory of infarct-related artery as compared with non-infarct-related arteries in patients with STEMI. There is no difference in the microcirculatory resistance between vessel adjacent to infarct-related artery and vessel giving collateral blood supply to infarct-related artery.

**TCT-338**

Abstract Withdrawn

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