Results: Percentage of patients with SVD at 5 years was 4.22% (95% CI 2.96–5.81) and at 8 years 15.77% (95% CI 12.46–19.43). For sizes 19 and 21 the incidence of SVD was higher reaching at 5 years 6.43% (95% CI 4.48–8.84) and at 8 years 20.06% (CI 15.53–25.01). Severe patient-prosthesis mismatch (PPM) showed to have an impact on SVD (HR=3.3 95% CI 1.86–5.45, p<0.001). However, moderate PDP had no impact. Presence of SVD was the most powerful predictor of mortality (HR=4.59, 95% CI 2.91–7.22, p<0.001) during the follow up.

Events during follow up
Cardiac related deaths 135 (13.13%) Non cardiac-related deaths 144 (14.01%) At least one cardiac-related hospitalization 112 (10.89%) Acute myocardial infarction 17 (1.65%) Stroke 42 (4.09%) Endocarditis 30 (2.92%) SVD 97 (9.44%) Causes of death in patients with SVD SVD as direct cause 20 (66.7%) Tumors 3 (10%) Stroke 2 (6.7%) Infectious process 5 (16.7%)

Conclusions: SVD is high in the Mitroflow prosthesis, especially for sizes 19 and 21mm. Its incidence increases exponentially from the fifth year and, since it appears, the risk of death is increased by 4.5 which must lead to close monitoring and early intervention.

4802 | BEDSIDE Occurrence and classification of cerebrovascular events after aortic valve replacement with a bioprosthesis J. Lehto1, M. Malmberg1, F. Biancari2, J. Hartikainen3, L. Ihlberg4, J. Airaksinen1, T. Nieminen4, T. Kiviniemi1.

Purpose:
CAREAVR study sought to assess the rate of strokes and transient ischemic attacks (TIA) in patients who underwent isolated aortic valve replacement (AVR) with a bioprosthesis at four Finnish hospitals between 2004 and 2014. The Finnish Foundation for Cardiovascular Research, State Clinical Research Fund (EVO) of Turku University Hospital, Bristol-Myers Squibb-Pfizer

Conclusions: TIA (HR 1.607, 95% CI 1.032–2.501, p=0.036) and discharge insulin (HR 2.465, 95% CI 1.200–4.670, p<0.001) were of cardioembolic etiology. These findings highlight the need for better prevention of cardioembolic events after AVR.

Acknowledgement/Funding: The Finnish Foundation for Cardiovascular Research

4818 | BEDSIDE Anatomic and functional imaging to predict long-term outcome and benefits of early revascularization in patients with suspected coronary artery disease: results from the EVINCI study D. Neglia1, R. Liga2, C. Caselli3, V. Lorenzoni4, G. Turchetti4, A. J. H. A. Scholte5, R. Sicari6, J. Zamorano6, M. Lombardi7, O. Gaemperli8, P. A. Kaufmann8, J. Knudt9, R. Underwood0 on behalf of EVINCI Investigators, 1 Fondazione Toscana G. Monasterio & CNR, Inst of Clinical Physiology, Pisa, Italy; Pisa, Italy; 2 Azienda Ospedaliero-Universitaria Pisana, Pisa, Italy; 3 CNR, Inst of Clinical Physiology, Pisa, Italy; 4 Scuola Superiore Sant’Anna, Pisa, Italy; 5 Leiden University Medical Center, Leiden, Netherlands; 6 University Hospital Ramon y Cajal de Madrid, Madrid, Spain; 7 RRCs, Policlinico San Donato, San Donato Milanese, Italy; 8 University Hospital Zurich, Zurich, Switzerland; 9 Turku University Hospital, Turku, Finland; 10 Imperial College London, London, United Kingdom

Introduction: Whether integrated non-invasive anatomic-functional imaging may predict long-term outcome in patients with suspected coronary artery disease (CAD) is not fully known.

Purpose: We assessed the prognostic role of computed tomography coronary angiography (CTCA) and stress imaging in a contemporary population of patients with suspected CAD enrolled in the multicenter European EVINCI study.

Methods: Six-hundred and ninety-seven patients with suspected stable CAD were enrolled from 2009 to 2012. Among them, 430 underwent CTCA and stress cardiac imaging with SPECT or PET and ECHO or CMR. If one or more tests were abnormal (i.e. >50% stenosis in at least one major coronary vessel on CTCA or >10% of LV ischemia in at least one stress-test), they were submitted to invasive coronary angiography (ICA) and revascularized according to clinical judgment. Follow-up visits were planned at 3–6 months and every year after enrollment. Imaging studies were analyzed by dedicated core-labs. The primary end-point was composed of death, non fatal myocardial infarction, hospitalization for unstable angina or heart failure. The secondary end-point also included late revascularization (>90 days after enrollment).

Results: Mean age was 61±9 years, 62% were men and 25% had typical angina. The mean pretest likelihood of CAD was 49±19%. ICA was performed in 291 pts and showed hemodynamically significant CAD in a major coronary vessel (>70% stenosis and/or FFR <0.8) in 127 (44%). Early revascularization (<90 days) was performed in 90/291 pts (31%). Over a mean follow-up of 4.4 yrs, a primary end-point occurred in 40 patients (9.3%) and a secondary endpoint occurred in 58 (13.5%). Using Cox model, including imaging variables (i.e. presence/absence of abnormal CTCA and presence/absence of abnormal stress test), age, gender, risk factors, and treatment, a positive CTCA was an independent predictor of primary endpoint (HR 2.23, 95% CI 1.20–4.16, P=0.012) and of secondary end-

Conclusions: The incidences of stroke and TIA were higher than previously documented after AVR with a bioprosthesis. The vast majority of strokes (45.2%) were of cardioembolic etiology. These findings highlight the need for better prevention of cardioembolic events after AVR.

Acknowledgement/Funding: The Finnish Foundation for Cardiovascular Research

CAD PROGNOSIS: IS CT THE NEW CRYSTAL BALL?

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Calcification of plaque

Univariate predictors of culprit plaque

Calcium grade (0–5) 1.9±1.5 3.0±1.7 0.008 0.681

High density plaque (>300HU) 14.8 (8.3, 25.1) 8.5 (4.7, 14.2) 0.002 0.708

Low density plaque (<50HU) 9.0 (5.8, 16.6) 5.4 (2.7, 9.1) 0.001 0.718

Very low density plaque (<30HU) 2.7±1.0 1.9±0.9 0.005 0.738

Stenosis grade (0–5) Median (Q1, Q4)/mean±SD/N (%)

Univariate predictors of culprit plaque

Conclusion:

Conclusions: In a contemporary population of patients with suspected stable CAD a positive CTCA is an independent predictor of long-term outcome. Non invasive coronary calcium density imaging predicts the prognostic benefits of early revascularization.

4819 | BEDSIDE
Can coronary plaque analysis in asymptomatic diabetics identify future culprit plaques triggering acute coronary syndromes? An 8 year prospective study based on coronary CT angiography

D.A. Halon, R. Rubinstein, B. Zatir, M. Azencot, B.S. Lewis, Lady Davis Carmel Medical Center, Department of Cardiovascular Medicine, Haifa, Israel

Background: Although diabetics are at increased risk for acute coronary syndromes (ACS), prospective identification of future culprit coronary plaques in these pts is poorly documented.

Purpose: Prediction of future ACS culprit plaques from coronary CT angiography (CTA) in asymptomatic type 2 diabetics

Methods: Detailed analysis of coronary plaques by CTA in 630 diabetics (age 63±5.5y, 50.5% women) with no clinical history of coronary artery disease (CAD) followed for 8.4±0.6y. In pts who later developed ACS (without prior elective revascularization to the culprit artery), culprit plaques were identified at invasive angiography and correlated with baseline CTA characteristics.

Results: ACS occurred in 216/630 (3.3%) pts (67 men, 383.2±2.5 (0.5–3.8) years after baseline CTA. At invasive angiography culprit plaques were identified and in all but 1 an antecedent plaque was identified on baseline CTA together with 122 non-culprit plaques. Precursors of culprit plaques were larger and longer, with higher stenosis grade, more low (<50HU) or very low (<30HU) density content and more often true bifurcation lesions. Stable (non-culprit) plaques had more high density (>300HU) content and visually more calcium. (Table). Combined C-statistic for prediction of culprit plaque (length, percent low density, stenosis grade) = 0.808.

Conclusion: Coronary plaques leading to late clinical events in asymptomatic diabetics displayed distinctive CTA characteristics several years earlier. They were less calcified, had a greater low density component, were larger in size with greater luminal stenosis and more often involved bifurcations.

Acknowledgement/Funding: European Foundation for the Study of Diabetes

4820 | BEDSIDE
Assessing the predictive value of coronary artery calcium score for predicting all-cause mortality in patients with renal impairment

J.H. Lee, H. Han, D. Rivié1, H. Gransar, H.E. Park, S.Y. Choo, J. Sung, S.H. Park, H.W. Han, H.O. Ju, E.J. Chun, H.J. Chang, 1Severance Hospital, Division of Cardiology, Seoul, Korea Republic of; 2Well Cornell Medical College, Department of Radiology, New York, United States of America; 3Cedars-Sinai Medical Center, Department of Imaging, Los Angeles, United States of America; 4Seoul National University Hospital, Division of Cardiology, Department of Internal Medicine, Seoul, Korea Republic of; 5Samsung Medical Center, Division of Cardiology, Heart Stroke & Vascular Institute, Seoul, Korea Republic of; 6Gangnam Heartscans Clinic, Department of Radiology, Seoul, Korea Republic of; 7Gangnam Heartscans Clinic, Department of Internal Medicine, Seoul, Korea Republic of; 8Seoul St. Mary’s Hospital, Division of Cardiology, Department of Internal Medicine, Seoul, Korea Republic of; 9Seoul National University Hospital, Division of Radiology, Seoul, Korea Republic of

Background: Renal impairment is considered as a coronary artery disease (CAD) equivalent. Yet, the evidence for an independent association of coronary artery calcium score (CACS) with adverse cardiovascular outcomes in patients with impaired renal function remains unclear.

Purpose: The current study therefore sought to assess whether CACS improves risk stratification as well as augments prediction of adverse outcomes beyond risk prediction algorithm in asymptomatic patients with renal impairment.

Methods: We identified 45,174 asymptomatic Korean adults (mean age: 52±10.6 years, 70.6% male) without known CAD who underwent CAC screening, and with renal impairment [estimated glomerular filtration rate (eGFR) 30–89 ml/min/1.73 m² by the MDRD equation]. The eGFR was categorized as 60–89 (n=41,425) and 30–59 ml/min/1.73m² (n=3,749). CACS was categorized as follows: 0, 1–100, 101–400, and >400. All-cause mortality incidence per 1,000 person-years and multivariable Cox proportional hazards models with 95% confidence interval (95% CI) were utilized. Discrimination by C-statistic and category-free net reclassification improvement (cNRI) were estimated for all-cause mortality.

Results: Over a median follow-up of 5.1-years (IQR, 3.3–7.3 years), 418 deaths (0.9%) occurred. Incidence of all-cause mortality increased on the background of a higher Framingham 10-year risk score (FRS) and CACS strata, regardless of eGFR strata. Following adjustment, CACS categories were shown to be robust predictors of all-cause mortality among eGFR subsets. Within eGFR subsets of 60–89 and 30–59, the CACS of 101–400 increased the hazard for all-cause mortality by 2.5-fold (95% CI: 1.2–2.9) and 2.1 (95% CI: 1.1–4.1) as compared with zero CACS. Furthermore, those with CACS >400 had a 1.9- (95% CI: 1.2–2.9) and 2.5-fold (95% CI: 1.2–5.3) increased risk of all-cause mortality compared with zero CACS (Figure). Notably, CACS improved discrimination and reclassification beyond FRS for predicting all-cause mortality, independent of eGFR subsets (e.g., C-statistic: 0.65 vs. 0.67, cNRI: 0.30, for eGFR 60–89, and C-statistic: 0.71 vs. 0.77, cNRI: 0.62, for eGFR 30–59, P<0.05 for all).

Conclusion: CACS improved risk stratification and provided incremental value beyond FRS for predicting all-cause mortality in patients with renal impairment, irrespective of eGFR status.

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SUDDEN CARDIAC DEATH IN THE YOUNG

4835 | BEDSIDE
Plaque instability in young sudden coronary death victims

S. Rizzo, G. Thieme, C. Basso. University of Padua, Padova, Italy

Background and purpose: The vulnerable atherosclerotic plaque underlying acute coronary syndrome including sudden death (SD) is typically represented by thin-cap fibroatheroma (FA) at risk of rupture and acute thrombosis. However in the young the culprit coronary lesion typically shows a thick fibrous cap, with a small or even absent lipid core (fibrocellular–FC– plaque), and thrombosis when occurring, mostly due to plaque erosion. The aim of the present study was to assess the prevalence of atherosclerotic coronary artery disease (CAD) and the substrate of plaque instability in young people (<40 yrs) who died suddenly.

Methods: Among a consecutive series of 690 consecutive cases of SD in the young prospectively collected in Northeast of Italy, time interval 1980–2016, 125