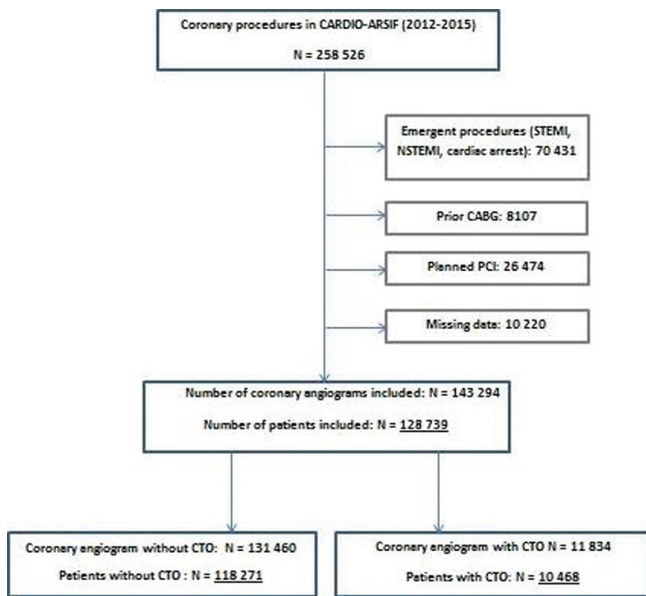


Purpose: The aim of this study was to provide contemporary data on chronic total occlusion (CTO) prevalence and management in a large unselected population in Paris, and to compare percutaneous coronary intervention (PCI) features in patients with and without CTO.

Methods: Between 2012 and 2015, 258526 elective coronary procedures were performed in the Paris conurbation and registered in the Cardio-ARSIF (Agence Régionale de Santé Ile de France) registry. Patients with acute coronary syndrome or previous coronary artery bypass grafting were excluded. Coronary CTO features were assessed and PCIs with and without CTO were compared.

Results: Of 128 739 included patients, 10 468 (8.1%) had at least one CTO. The cardiovascular risk-factor burden was higher in the CTO group with higher prevalence of hypertension, dyslipidemia, current smoking, and diabetes. CTO group had more patients with multivessel disease (73.8% vs 23.5%, $p < 0.0001$) and with referral for interventional management (59% vs. 33%, $p < 0.0001$). Both ad hoc and staged PCIs were more common in patients with versus without CTO. In the CTO-PCI group, 86.6% of patients had documented ischemia. Of the 49923 PCIs performed during the study period, 5.7% involved a CTO; this proportion increased significantly over the study period from 2.6% in 2012 to 7.2% in 2015 ($p < 0.0001$). Fluoroscopy time decreased significantly from 2012 to 2014 and remained stable thereafter, whereas the dose-area product continued to decrease ($p < 0.0001$). The CTO-PCI success rate was 75.9%. CTO-PCI volume per center did not correlate with CTO-PCI success rate. Even after excluding very low volume centers (<25/year).



Flowchart of the study population

Conclusion: Our CTO prevalence of 8.1% is lower than earlier reports. Recent data suggest that the prevalence of CTO may be declining in western countries. This decline might be related to improved cardiovascular risk management and to the increasing rate of primary PCI in patients with STEMI and non-STEMI. Invasive management is done more often in patients with than without CTO either by PCI or CABG. These results confirm that the presence of a CTO is no longer an obstacle to treat coronary stenosis by PCI. The success rate of PCI in CTO is not associated with case volume per center. The use of PCI to treat CTO is increasing in everyday practice. The procedural success rate of CTO-PCI was acceptable, at 75.7% compared to 97.1% for non-CTO-PCI, but indicates room for improvement via improvements in equipment and techniques. The Cardio-ARSIF registry provides useful data for monitoring CTO procedures on a large scale and over a long period.

P3638

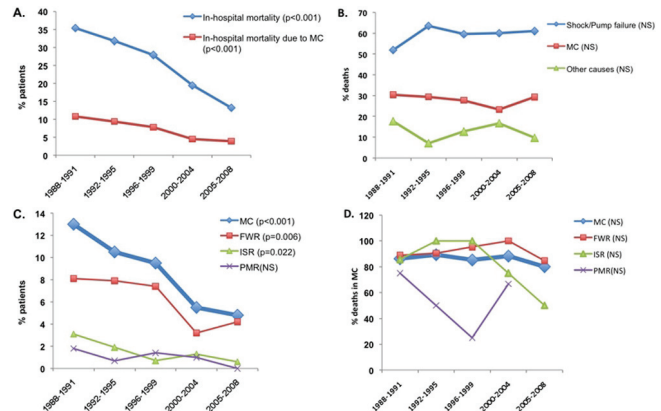
Time trends in mechanical complications after ST-elevation myocardial infarction

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Aim: The increased use of reperfusion therapy has led to an important decline in short-term mortality after acute STEMI in the last decades, particularly in the oldest patients. While the rate of cardiogenic shock has not changed dramatically, we speculated whether a change in the incidence or fatality rate of mechanical complications (MC), the second cause of death in these patients, might justify the improvement in survival. We aimed to assess the time trends in the incidence, management, and fatality rates of MC, and its influence on short-term mortality in older patients with STEMI.

Methods and results: Between Jan-1988 and Dec-2008, 1393 patients ≥ 75 years old with first STEMI were enrolled. Time trends across five time periods

were analysed with the Mantel-Haenszel χ^2 test of linear association for categorical variables. All-cause, in-hospital mortality decreased from 35.5% in 1988–1991 to 13.5% in 2005–2008 (RRR 62%, p for trend < 0.001). While the absolute mortality due to MC decreased from 6.9% to 3.9% ($p < 0.001$), the proportion of deaths among all deaths did not change (28.2% to 29.3%, $p = 0.46$). The incidence of MC went down from 13.0% in 1988–1991 to 4.8% in 2005–2008 (RRR 63%), with a 48% RRR in the incidence of free wall rupture (from 8.1% to 4.2%, $p < 0.01$), a 80% RRR in the incidence of ventricular septal rupture (from 3.1% to 0.6%, $p = 0.02$) and from 0.9% to 0% for papillary muscle rupture, $p = 0.07$. Survival after MC did not change over time (from 13.8% to 20%, $p = 0.63$) while surgical repair fell from 27.6% to 13.3% ($p = 0.005$) with no difference in postoperative survival (from 30.8% to 50%, $p = 0.55$).



Conclusion: Although reperfusion therapy has been successful in decreasing the incidence of MC in elderly patients with STEMI over a 20 year-period, this reduction was proportional to other causes of death, that is, non-specific. Case-fatality rates after MC have not improved over time, with and without surgery.

P3639

Long term clinical outcomes of patients with coronary artery aneurysm

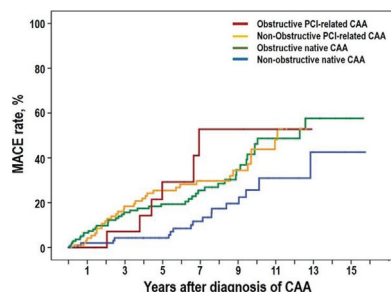
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Background/Introduction: Coronary artery aneurysm (CAA) is uncommon anomaly of coronary artery that is related with atherosclerosis. However, natural history of CAA remains unclear and long term clinical outcome of CAA has not been elucidated.

Aim: The purpose of this study was to identify the incidence of CAA and the long-term clinical outcomes of patients with non-obstructive (NOB) or obstructive CAA.

Methods: We retrospectively collected the data by analyzing the angiographic data of 37 451 consecutive adult patients undergoing coronary angiography (CAG) between January 2001 and December 2012. The CAA was defined as a localized dilatation of a coronary artery segment more than 1.5-fold compared with adjacent normal segment.

Results: CAAs were found in 435 vessels from 365 patients and the incidence of CAA was 0.97%. Mean age of patients was 61.7 ± 11.2 years and 230 patients (63%) were male gender. The number of CAA in native coronary artery was 313 (72%) and 122 CAAs (28%) were related with previous percutaneous coronary intervention (PCI). Most common affected artery was right coronary artery (39.6%) in native CAA and left anterior descending artery (59.0%) in PCI-related CAA ($P = 0.001$). Morphologically, most of native CAA were fusiform type (77.6%) and sacular type was common in PCI-related CAA (50.8%). In native CAA, 146 (46.6%) was non-obstructive (NOB) CAA and 105 (86%) were non-obstructive in PCI-related CAA. Follow-up CAG was done in 236 vessels (median follow-up duration: 1.7 years). Aggravated stenosis was found in 67 CAAs (28.4%) and increased size, decreased size and stationary size of CAA were 37 (15.7%), 33



Kaplan-Meier survival curve of CAAs

(14.0%) and 99 (41.9%), respectively. Median clinical follow-up duration was 2 892 days (interquartile range 1711.5–3704.0 days). Until 5 years after diagnosis, aneurysm-related major adverse cardiac events (MACEs) rarely occurred in native NOb-CAA (3 patients, 2.6%), however, it evidently increased after 5 years (12 patients, 10.5%). In PCI-related aneurysm, aneurysm-related MACE rate of NOb-CAA was as high as that of obstructive CAA in 5-year (20.6% vs. 25.0%, $p=0.743$) and longer-term follow-up (26.8% vs. 31.2%, $P=0.765$). During longer-term follow-up, MACEs occurred in 17 patients (14.9%) with native NOb-CAA, 42 (30.4%) with native obstructive CAA, 33 (34.0%) with PCI related NOb-CAA, and 6 (37.5%) with PCI related obstructive CAA (Log-rank p -value=0.041).

Conclusion: The CAA was a rare coronary anomaly, but it was associated with high MACE rate. In native CAA, short-term MACE rate of NOb-CAA was relatively low however, it evidently increased after 5-year follow-up. PCI-related CAA has high MACE rates regardless of stenosis. Therefore, careful observation and management are required for these patients with CAA.

P3640

ral Network (ANN) model. For predictive accuracy comparison we also developed a traditional logistic regression risk score using established variables, and determined GRACE score. The area under the Receiver Operating Characteristics (ROC) curve was used to evaluate predictive ability (C-index). Data was split in 80/20 for training and testing purposes.

Results: A total of 96 249 patients were included of whom 31 833 had ST-elevation AMI. C-indices for the three models are presented in Table 1. ANN yielded a higher c-index compared to GRACE in predicting heart failure re-admission, in-hospital mortality and 1-year mortality. SWEDEHEART logistic regression score performed equally well as the ANN model.

Table 1. C-indices for the three models

Endpoint	GRACE score	SWEDEHEART logistic regression score	ANN score**
1-year mortality	0.820*	0.871	0.874
1-year heart failure admission	0.762*	0.841	0.856
In-hospital mortality	0.857*	0.862	0.897

* $p < 0.05$, **reference.

Conclusion: A machine-learning algorithm predicted in-hospital mortality, heart failure re-admissions and 1-year mortality with higher accuracy compared to GRACE. However, the algorithm was not superior to the SWEDEHEART logistic regression model using established variables.

P3642

Increased prevalence of coronary artery disease in patients with chest pain and concomitant rheumatoid arthritis: an analysis from a clinical computed tomography-based large-scale population cohort

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Background: Inflammation seems to play a central role in the development of atherosclerosis and inflammatory diseases seem to promote progression of coronary artery disease (CAD). Rheumatoid arthritis (RA) is such an immune-inflammatory disease occurring in app. 1% of the general population and causing chronic systemic inflammation. RA has previously been associated with premature cardiac events. However, knowledge of CAD prevalence and severity in RA patients is still sparse.

Purpose: The aim of this study was to examine the prevalence and severity of CAD in RA patients from a large-scale cohort with chest pain referred for CAD rule out.

Methods: This was a cross sectional study in 47,603 patients from the Western Denmark Cardiac Computed Tomography Registry. For each individual, data included cardiac CTs with a registration of up to 40 clinical variables. RA patients were identified through linkage with the Danish National Patient Registry. All analyses were performed for overall RA and the serological subtypes: "sero-positive RA" and "other RA". The prevalence of having a coronary artery calcium score (CACS) >0 among RA and non-RA patients was assessed by estimating odds ratios (OR) (including 95% CI), adjusted for gender, age, Charlsons co-morbidity index, hypertension, lipid lowering treatment, smoking and Body mass index.

Results: A total of 436 (0.9%) patients with concomitant RA were identified; 341 (78.2%) being sero-positive. Seventy three percent of the RA patients were women compared to 54% of the non-RA patients $p < 0.01$. Non-obstructive CAD was present among 33.5% of the RA patients vs. 28.5% of the non-RA patients ($p < 0.01$), and 12.8% of the RA patients had a CACS >400 vs. 9.4% for non-RA patients ($p < 0.01$). OR for having a CACS >0 was 1.20 (95% CI: 0.95; 1.51) for overall RA, 1.33 (95% CI: 1.02; 1.73) for sero-positive RA and 0.82 (95% CI: 0.50; 1.34) for other-RA respectively.

Conclusion: Based on data from a large cardiac CT database, coronary artery calcifications are more frequent in patients with concomitant seropositive rheumatoid arthritis. In particular, the occurrence of severe calcifications are more frequent. These findings support the hypothesis that inflammatory disease may accelerate the atherosclerotic process leading to increased coronary artery calcification and risk of cardiac events.

P3643

Assessing the external validity of the VALIDATE trial

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Background: The VALIDATE-SWEDEHEART trial is a registry-based randomised trial comparing bivalirudin and heparin in patients with acute coronary syndrome; forty-eight percent of patients that were eligible for randomisation were included in the trial. The remaining patients (screened not enrolled) were followed up by the SWEDEHEART registry only. An evaluation of how their omission may have affected the results of the trial is warranted.

Methods: A logistic regression was used to calculate the probability of being selected in the VALIDATE trial; inverse probability weights were produced and the average propensity score difference was calculated between those in the trial and those not included as a means of gauging their similarity. A standard deviation of less than 0.25 was considered similar, as defined by Stuart et al. for the VALIDATE

P3641

Predicting one year mortality and heart failure with artificial intelligence after a myocardial infarction

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Background: The use of artificial intelligence in healthcare is increasing rapidly. The major advantages include the ability of self-learning as well as predicting non-linear associations. The aim of this study was to create a new risk score to predict 1-year mortality and heart failure re-admission after an acute myocardial infarction (AMI) using a machine-learning algorithm.

Methods: Using the nationwide registry SWEDEHEART we included all AMI patients admitted to any CCU in Sweden during 2008–2013. Using random forest importance ranking we identified 47 variables that were used in an Artificial Neural

ABSTRACT WITHDRAWN