mortality and heart failure, after discharge, in patients with acute coronary syndrome without persistent ST-segment elevation (NSTEMI).

Methods: We conducted an observational and retrospective analysis of patients admitted in our cardiology coronary care unit with NSTEMI between 2004 and 2014. Two groups were defined according to time of coronary revascularization from admission, group A (early <24 hours) and group B (delayed >24 hours). We performed a propensity score matched analysis to obtain 2 groups of 938 patients paired according to early or delayed revascularization

Results: 2949 patients were admitted with NSTEMI from February 2004 to September 2014. Median age was of 69±13 years and 71.3% were men. During follow-up (median 5.28 years), after propensity score matching, patients who early revascularization had lower rates of mortality 3% group A vs 5.6% group B, p<0.01), less kidney failure (3.3% group A vs 7.3% group B, p<0.01), and fewer infections (3.3% group A vs 7.3% group B, p<0.01). Heart failure was more prevalent in group B. Therefore, the early revascularization was an independent protective factor of mortality after adjusting for confounding variables in the multivariate Cox regression analysis (hazard ratio = 0.74; 95% confidence interval, 0.60–0.92; p=0.0067). Nevertheless, this strategy had protector effect of heart failure no significantly (hazard ratio = 0.84; 95% confidence interval, 0.64–1.09; p=0.09).

Conclusions: Early revascularization (<24 hours) of NSTEMI is associated with a significantly lower mortality than delayed revascularization and a rate lower of heart failure.

P6397
The choice of invasive strategy in patients with non-ST-segment elevation acute coronary syndrome by use the RECORD scale

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On behalf of RECORD-3 registry

Background: The contemporary guidelines suggest that the selection of patients with non-ST-segment elevation acute coronary syndrome (NSTEACS) for invasive treatment should be determined on the basis of various risk factors. The prognostic scales are an accurate tool for this selection. The prognostic scale RECORD, created on base eponymous registry, has similar prognostic significance regarding in-hospital death with "gold standard" – GRACE scale.

Purpose: The purpose of this analysis was as follows: 1) to assess the prognostic value of the RECORD scale for long-term adverse events after ACS; 2) to assess the possibility of using the RECORD scale for the selection of patients with NSTEACS to invasive treatment strategy.

Methods: The analysis was performed on group of patients with NSTEACS, included in registry RECORD-3 (Mar-Apr 2015, 47 hospitals from 37 sities). The RECORD scale is consist 6 factors: 1) Age ≥65; 2) Known diabetes mellitus: 3) Killip class ≥II; 4) Systolic BP on admission ≤100 mmHg: 5) First hemoglobin level <10.0 g/dl; 6) ST-segment elevation on the first ECG. Each of those factors has a 1 point. The criterion of high risk in each patient was the presence of at least one point on RECORD scale. The cases of all-causes death developed after discharge from a hospital within 6 months after onset of ACS were observed. The criterion for invasive treatment strategy was the performance of coronary angiography (CAG) during hospitalization.

Results: Among 888 NSTEACS patients who were discharge from the hospitals alive, the high risk on RECORD scale (≥1 points) was in 515 (58%). The rate of 6-months post-discharge death was significantly higher in patients with RECORD scale high-risk in comparison with non-high risk (0 points): 7.8% vs. 0.8% (Relative risk [RR] 9.68; 95% confidential interval [95CI] 3.01–30.98; p<0.0001). Among high risk on RECORD scale patients who underwent in-hospital CAG the 6-month post-discharge death was significantly low than in high-risk patient without in-hospital CAG: 4.5% vs. 9.9% (RR 0.43; 95CI 0.21–0.87; p=0.021). Among non-high risk on RECORD scale patients the rate of 6-month post-discharge death was about the same those performed and not performed CAG: 0.9% vs. 0.7% (RR 1.22; 95CI 0.07–8.22; p=0.82).

Conclusions: The RECORD scale is simple and accurate predictor of 6-month post-discharge death in patients with NSTEACS, and possible tool for choice patients for invasive strategy. The performing CAG was associated with a lower rate of 6-month post-discharge mortality only in high-risk patients on a RECORD scale, but not in low-risk patients.

P6398
A single end-organ lesion marker outperforms GRACE and Zwolle scores combined: the value of delta creatinine

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Background and aim: Prognosis refinement is a never-ending quest in acute coronary syndromes. Beyond cardiac troponin, no currently existing score incorporates specific ongoing end-organ lesion markers in risk estratification. We sought to evaluate the prognostic impact of adding absolute creatinine changes to known risk scores.

Methods: Retrospective single-center analysis of all patients admitted for STEMI and undergoing primary PCI in a two-year period (January 2009 to Decem-

ber 2010). Modified Zwolle (age, time to reperfusion, anterior infarct, multivessel disease, post-reperfusion TIMI) and GRACE (age, systolic blood pressure, heart rate, admission creatinine, Killip class, cardiac arrest, troponin, ST-segment changes) were included in a multivariate Cox regression model to account for known prognostic variables. Delta creatinine was defined as the difference between admission and peak creatinine during index hospitalization. Primary endpoint was 5-year all-cause mortality.

Results: 276 patients were included (mean age 62±14 years, 75% male), with 49% (n=134) being admitted for anterior STEMIs. Median GRACE score was 147 (IQR 130–170) and median modified Zwolle was 1 (IQR 1–2). Median delta creatinine was 0.19 (IQR 0.04–0.40) mg/dL. 30-day, 1-year and 5-year all-cause mortality were 4.8%, 8.7% and 23%, respectively.

In the follow-up period, delta creatinine stratified primary endpoint by tertiles of increasing severity (log-rank p<0.001). After Cox regression multivariate analysis, delta creatinine was the strongest independent predictor of 5-year all-cause mortality [HR 1.239 (CI 95% 1.001–1.534)] and was not influenced by total contrast volume administered during PCI [HR 1.001 (CI 95% 0.998–1.003)]. Adding delta creatinine to a model including GRACE and modified Zwolle provided incremental prognostic value to assess the primary endpoint [AUC 0.847 (CI 95% 0.779–0.914) vs. AUC 0.763 (CI 95% 0.681–0.845), p=0.058).
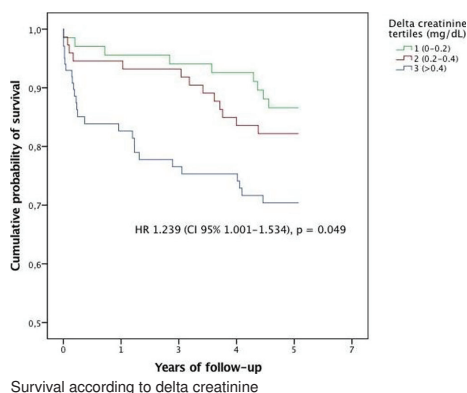
Survival according to delta creatinine

Conclusion: Delta creatinine is a powerful prognostic end-organ lesion marker that improves 5-year prognosis stratification in STEMI patients beyond static renal function and currently used risk scores. External validation is warranted to confirm and broaden its future applicability.

P6399
The obesity paradox in STEMI patients treated with primary PCI: is it a matter of sex?

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Background: The obesity paradox consists in the prognostic advantage shown by overweight patients in many diseases, among them acute coronary syndromes. Some authors suggested that this phenomenon occurs differently in male versus female patients, but the data are scanty in patients with ST segment elevation myocardial infarction (STEMI).

Purpose: The aim of our study was to investigate the presence of the obesity paradox in a large multi-center STEMI population, and to determine whether it has a differential impact on survival based on gender.

Methods: We enrolled 4365 consecutive STEMI patients treated with primary PCI in two tertiary Hospitals in Italy from 2005 to 2017. We stratified our population in BMI quartiles and we compared the 4th BMI quartile with the others. Comparisons between patients in the 4th quartile and the others were made with Fisher exact test and Mann-Whitney test as appropriate. Thirty-day mortality were estimated using Kaplan-Meyer curves with log-rank test. The mean follow-up was 776 days.

Results: The mean BMI was 26.5±4.3. BMI intervals in the four quartiles were respectively 14.7–23.6 (1st), 23.7–25.8 (2nd), 25.9–28.6 (3rd) and 28.7–58.4 (4th). Compared with patients in the other quartiles, patients in the fourth quartile were younger (p=0.001), more often smokers (p=0.045), hypercholesterolemic (p<0.001), hypertensive (p<0.001) and diabetics (p<0.001); they and had less frequently Killip class >2 at presentation (p=0.003). No differences were found in hemoglobin and creatinine at admission, familiarity for CAD, use of IABP, use of GPI, incidence of pre-infarction angina and out of hospital cardiac arrest, previous MI, CABG and PCI nor in LVEF. Thirty-day mortality was significantly lower in the 4th quartile vs the others (3.1% vs 5%, p=0.008). Among female patients (n=1073; 24.6%), those in the fourth quartile (n=248) had no significant survival benefit compared to the others, with 30-day mortality of 6.7% vs 7.8% (p=0.591 – figure panel A), while the benefit remained in male patients (n=854) (2% vs 4.1%,

p=0.006 – figure panel B). Among the overall population, the p for interaction between BMI and sex for 30-day mortality was significant (p<0.001).
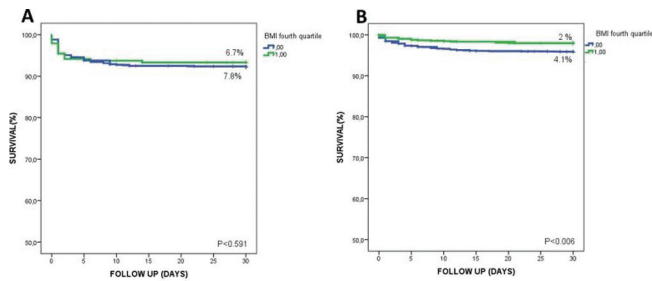
Figure. Panel A: 30-day survival in female patients in the 4° BMI quartile vs the others; **panel B**: 30-day survival in male patients in the 4° BMI quartile vs the others.

Conclusions: Our data showed that, among patients with STEMI treated with primary PCI, those in the upper BMI quartile had a better short-term prognosis, confirming the existence of a "BMI paradox". However, the prognostic advantage associated with a higher BMI is present only in male patients, suggesting hypothetic protective mechanisms to be enhanced or counterbalanced by gender.
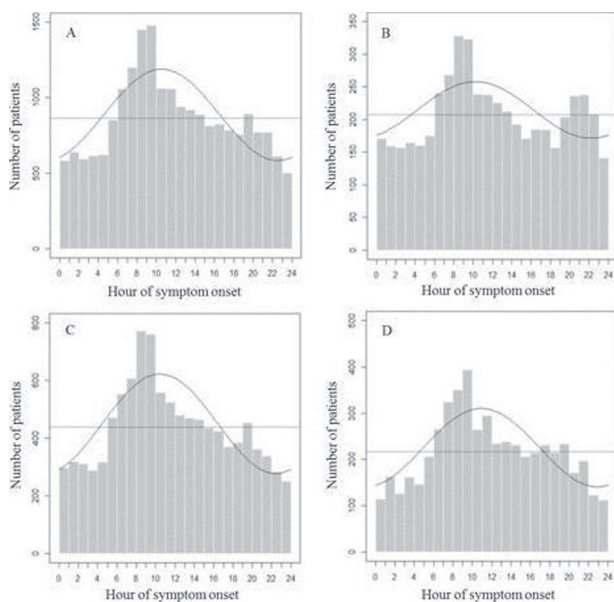
P6400
Circadian distribution of acute myocardial infarction in different age groups: sinusoidal function analyses

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Objectives: Many epidemiologic studies have reported a morning peak in the incidence of acute myocardial infarction (AMI). However, clinical outcomes and the relationship between age distribution and circadian pattern have not been fully investigated in a large cohort of patients with AMI. The aims of this study are to clarify the impacts of onset time of circadian variation on incidence and clinical outcome of AMI according to age.

Methods: From the Korea Acute Myocardial Infarction Registry (KAMIR) database, we retrospectively gathered data of 20,685 eligible patients from 53 centers located in the Republic of Korea. Data from a total of 19,915 patients (11,339 STEMI, 8,576 NSTEMI) were analyzed from the registry, after exclusion of those with diagnosis other than STEMI/NSTEMI.

Results: A morning-dominant incidence distribution was shown by sinusoidal function, in total patients and in all separate age groups (age <55, 55 ≤ age <75, 75 ≤ age). In-hospital mortality and major adverse cardiovascular events (MACEs), including cardiac deaths, non-cardiac deaths, recurrent myocardial infarction (MI), repeated percutaneous coronary intervention (PCI), and coronary artery bypass graft (CABG) at 1, 12, and 24 months follow up were compared among 4 time periods (00:00–05:59, 06:00–11:59, 12:00–17:59, 18:00–23:59), and no significant difference was noted. Kaplan-Meier curve was drawn for death and MACE-free survival, and no significant event-free survival was depicted (p value = 0.31).

Conclusions: The incidence rates of MI onset were unevenly distributed among all patients and age groups, shown by sinusoidal function test. However, there were no significant differences in in-hospital mortality or MACEs among the 4 time periods during 24 months of follow up.

P6401
Retinal optical coherence tomography angiography as a biomarker of acute kidney injury after acute coronary syndrome

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Background: Contrast-induced nephropathy (CIN) after percutaneous coronary intervention (PCI) for acute coronary syndrome (ACS) is frequent and associated with long-term renal impairment and mortality. Better understanding of CIN mechanisms are needed to improve risk stratification. We recently described that retinal vessel density (RVD) measured by OCT-Angiography could reflect the global cardiovascular burden of ACS patients. Indeed, this new tool could provide a fast and non-invasive evaluation of the systemic microcirculation, involved in CIN occurrence

Methods: Between October 2016 and March 2017, 243 ACS patients were admitted in our coronary care unit. Retinal OCT-A was performed within two days after PCI. Patients with previous or current retinal disease were excluded. Patients were divided in two groups, according to Acute kidney injury (AKI) occurrence (KDIGO criteria, increase in creatinine >26.5µmol/L within 2 days or >50% within 7 days after contrast injection). For each patient, Mehran score was calculated to assess the risk of AKI, according to hypotension, intra-aortic balloon pump, congestive heart failure, chronic kidney disease, diabetes, age >75 years, anemia, and volume of iodinated contrast media.

Results: Of the 243 consecutive patients admitted for ACS during the inclusion period, 216 (Unstable Angina 12%, NSTEMI 46%, STEMI 42%) had a PCI and an analyzable OCT-A. Overall, AKI occurred in 21 (10%) patients. AKI was significantly associated with age (69±14y vs 62±12y, p=0.009) and Mehran score (7.9±5.6 4.3±3.4, p=0.006), but not with the volume of iodinated contrast media (163±75ml vs 146±63ml, p=0.249). Creatinine level was higher in AKI group before (107.3±52µmol/L/l vs 78.5±20.4µmol/L/l, p=0.021) and 48 hours after contrast injection (147.5±76.6µmol/L vs 83.2±18.9µmol/L, p=0.001). AKI patients had lower retinal vessel density values than non-AKI patients (17.7±2.3 mm⁻¹ vs 19.2±2.3 mm⁻¹, p=0.004) and had more often lower retinal vessel density (81% vs 45.1%%, p=0.002). ROC curves comparison displayed similar predictive values for Mehran score and RVD for AKI occurrence after PCI (fig 1). The addition of low (i.e. inframedian) RVD to Mehran score significantly improved its predictive value (p=0.024).
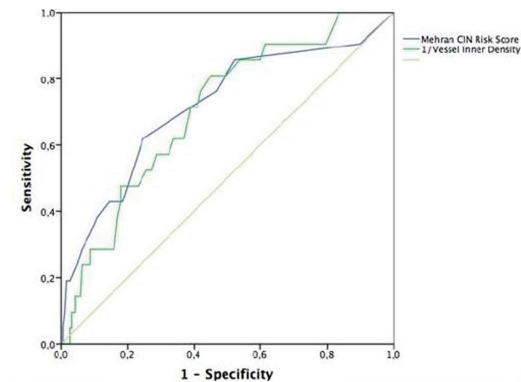
Area Under the Curve				
				Asymptotic 95% Confidence Interval
Test Result Variable(s)	Area	Std. Error	Asymptotic Sig.	Lower Bound	Upper Bound
Mehran CIN score	,717	,065	,001	,590	,844
1/retinal vessel density	,705	,055	,002	,596	,813

ROC curve analysis

Conclusion: AKI after primary PCI for ACS was strongly and independently associated with low RVD evaluated with OCT-Angiography. Moreover, this new retinal biomarker improved the predictive performance of Mehran risk score, suggesting that the microvascular systemic impairment is not currently taken into account neither by the classical risk score nor by the known clinical and biological factors associated to CIN onset.

Frequency distribution of MI onset during a 24-hour period. Onset time distribution (gray column), null hypothesis (dotted line), and the modelized sinus function (curved line) were drawn for each age group. (A, all ages; B, age<55; C, 55≤age<75; D, 75≤age)