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Relevance of the CYP2C19 Polymorphism for Loading and Maintenance dose of Prasugrel and Clopidogrel Treatment Effect in Coronary Artery Disease Patients Undergoing Percutaneous Coronary Intervention: The PRAISE-GENE Study

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OBJECTIVES CYP2C19 polymorphism has been reported to be associated with altered antiplatelet activity of clopidogrel. On the other hand, prasugrel exerts greater and more consistent platelet inhibition with rapid onset when compared to clopidogrel in both healthy subjects and stable coronary artery disease patients. We sought to compare the effect of prasugrel and clopidogrel on CYP2C19*2 or *3 loss of function (LOF) alleles in patients undergoing percutaneous coronary intervention (PCI).

METHODS In this prospective, two-center, randomized, open-label study, patients with LOF who had undergone PCI were enrolled. Thirty-four patients out of forty five gene screening by the Spartan RX CYP2C19 system (Spartan Bioscience Inc, Ottawa, Canada) were randomized to either clopidogrel (600 mg LD, followed by 75 mg MD daily) or prasugrel (30 mg LD, followed by 5 mg MD daily). The primary endpoint was HPR at 24 hours after PCI, as determined by the VerifyNow assay.

RESULTS Higher inhibition of platelet aggregation was observed in the prasugrel group than the clopidogrel group (Pre-PCI: 236.7±70.6 vs 267.7±60.9, p=0.352; Post-PCI: 79.7±104.7 vs 221.6±45.7, p=0.002; 30 days: 206.4±60.2 vs 132.6 ±60.4, p=0.028).

CONCLUSIONS Compared to clopidogrel, prasugrel led to a greater reduction platelet reactivity in CYP2C19*2 or *3 loss of function (LOF) alleles patients who underwent PCI. Periprocedural myocardial necrosis and clinical follow up will be presented.

GW27-e0604

Remote ischemic per-conditioning of the lower limb during primary percutaneous coronary intervention reduced enzymatice infarct size in STEMI patients

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OBJECTIVES Limiting infarct size at the acute phase is a clinical goal. Cardiac ischemic-reperfusion (IR) injury following percutaneous coronary intervention (PCI) has become a hurdle in improving patient outcome. We investigate whether remote ischemic per-conditioning (RIPerC) performed in patients with ST-segment elevation myocardial infarction (STEMI) before PCI would reduce infarct size.

METHODS STEMI patients were recruited and randomly allocated to two groups: (1) control group (n=66), PCI alone; (2) RIPerC group (n=60), RIPerC combined with PCI, consisting of three cycles of 5 min inflation and 5 min deflation of the left lower limb blood pressure cuff performed before reperfusion. Serial plasma levels of creatine kinase-MB isoenzyme (CK-MB) during 72h following admission were measured as a surrogate marker of infarct size.

RESULTS Overall, the area under curve (AUC) of CK-MB was comparable between RIPerC and control groups (6179 ± 437.9 vs. 8130 ± 534.7 a.u., P=0.006). There was also significant difference in the peak CK-MB level bwteen the two groups (281.8 ± 22.33 U/L vs. 368.8 ± 24.96U/L, P=0.011). Interestingly, In the subgroup of patients,whose infarct-related artery were left anterior descending (LAD),CK-MB AUC (6263 ± 487.7 vs. 8268 ± 749.6 a.u., P = 0.037) and peak CK-MB (304.8 ± 28.57 vs. 392.5 ± 32.76U/L, P = 0.047) was significantly reduced in the RIPerC in comparison to the control group. The negative outcome was observed in patients whose infarct-related artery were not LAD,but RCA or LCX. ST-segment resolution >50% was 76.7% in RIPerC and 59.1% in control subjects (P= 0.035). We observed no significant differences in TIMI frame count after PCI.

CONCLUSIONS RIPerC of the Lower Limb prior to PCI reduced enzymatic infarct size in STEMI patients, especially in patients with a culprit vessel of LAD.

GW27-e0810

Increased expression of miR-125a-3p in peripheral blood mononuclear cells of patients with acute coronary syndrome

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OBJECTIVES Macrophages play a key role in the occurrence and development of coronary atherosclerosis, tissue macrophages can be divided into two types, the classical activation type (type M1) and alternative activation type (M2 type), M1 type macrophages mainly for promoting inflammation, and M2 type macrophages mainly for anti-inflammatory effect. Recent studies show that the balance of M1/M2 plays an important role in atherosclerotic plaque stability. And a study show that miR-125a-3p plays an important role in the regulation of the differentiation of monocytes to M1 type macrophages.

METHODS 20 cases of normal control group(group A), and the patients with coronary heart disease were divided into 23 cases of stable angina pectoris group(group B), and 40 cases of acute coronary syndrome group(group C). All people were confirmed by coronary angiography. Extracting object venous blood and separating the mononuclear cells, total RNA was extracted from the resulting mononuclear cells, and then the total RNA was reverse transcribed using the reverse transcription object microRNA reverse primer synthesis, the level of miRNAs in blood was detected by using real-time fluoresecnt quantitative PCR. To detect the expression level of peripheral blood mononuclear cells differentiation miR-125a-3p in patients of Coronary atherosclerotic heart disease.

RESULTS Compared with group A, the levels of miR-125a-3p in group B, group C were significant high expression (P<0.01). Compared with group B, the levels of miR-125a-3p in group C was significant high expression (P<0.01). group C > group B > group A.

CONCLUSIONS miR-125a-3p may be a new targets for the treatment of unstable plaque.

GW27-e0843

Usefulness of SYNTAX score II to Predict In-hospital Outcomes in Patients with Primary Percutaneous Coronary Intervention

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OBJECTIVES SYNTAX score can predict in-hospital major adverse cardiovascular events (MACE) in the patients admitted with ST elevation myocardial infarction (STEMI) who undergo primary percutaneous coronary intervention (PCI). This study aimed to assess whether the SYNTAX score II (SS-II), combined the SYNTAX score with clinical variables, can improve the ability of three different types of risk predictive scores (SYNTAX score, Global Registry of Acute Coronary Events risk score and Zwolle risk score) to predict in-hospital mortality.

METHODS The SS-II was calculated in 477 patients with STEMI who undergoing primary PCI enrolled in our study. The study population was divided into tertiles based on the SS-II values. A high SS-II (n= 196) was defined as a value in the third tertile (> 26.5), while a low SS-II (n= 322) was defined as a value in the lower two tertiles (≤ 26.5). MACE was defined as all cause mortality, advanced heart failure, target vessel revascularization (TVR), and recurrent myocardial infarction in the hospital.

RESULTS MACE were significantly higher in the SS-II high group, including in-hospital mortality (5.5% vs. 0.8%, P=0.003), advanced heart failure (14.2% vs. 6.0%, P=0.002), TVR (5.7% VS. 1.2%, P=0.005), compared with those in the SS-II low group. But there was no difference in recurrent myocardial infarction (3.2% vs. 1.6%, P=0.241) between the two groups. Multivariable analysis showed SS-II was a significant independent predictor for in-hospital mortality (OR: 2.151, 95% CI:1.281-3.613, P<0.001). The receiver operating characteristic curve showed that SS-II had 93.0% sensitivity and 57.4% specificity for predicting in-hospital mortality as a cut-off value of 26.5. The respective C-statistics of SS-II, SYNTAX score, GRACE risk score and Zwolle risk score for in hospital mortality were 0.803, 0.679, 0.692, and 0.785 (P<0.05).

CONCLUSIONS SS-II is a useful tool that can predict in-hospital mortality of patients with STEMI undergoing primary PCI and has an improvement ability to predict in hospital mortality.

GW27-e0874

The impact of prior use of four preventive medications on outcomes in patients hospitalized for acute coronary syndrome–Results from CPACS-2 Study

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OBJECTIVES While the role of four medications (antiplatelet agents (aspirin or clopidogrel), angiotensin converting enzyme inhibitor/angiotensin receptor blocker, statin and beta-blockers) in preventing the incidence of acute coronary syndrome (ACS) is well-established, it is unclear whether these four medication benefit patients who develop ACS despite its use.

METHODS The study population was drawn from the Clinical Pathways for Acute Coronary Syndromes-Phase 2 Study. 14790 ACS patients were recruited from 75 hospitals across China. Logistic regression and propensity-score analysis were applied to assess the association between prior use of the four medications and in-hospital clinical outcomes including disease severity (type of ACS, systolic blood pressure <90 mmHg, and heart rate>=100 beats/min), complicating arrhythmia and major adverse cardiovascular events (MACEs, including all deaths, non-fatal myocardial infarction or re-infarction, and non-fatal stroke). Then, to test the hypothesis that the effect of prior use of four medications may be mediated through the effect on disease severity at presentation, multiple logistic regression was performed with additional adjusting for disease severity. The trend of risk with increase of number of the medications was tested. We also did the analysis separately for patients with and without history of cardiovascular disease to reveal if the purpose of prior use of these medications (primary or secondary prevention) modified the effects.

RESULTS Among the four preventive medications, use of antiplatelet agents was most commonly reported (31.1%), while statins were least used (13.3%). The proportion of no prior use of any of the four preventive medications was 61.8%, while it is still high (46.9%) even among those with history of cardiovascular disease. Prior use of each of the four medications was significantly associated with less severity of disease (ORs ranged from 0.38 to 0.82, all P<0.05), less arrhythmia (ORs ranged from 0.45 to 0.64, all P<0.05), and reduced risk of MACEs (ORs ranged from 0.59 to 0.73, all P<0.05) during hospitalization, after adjusting for multiple confounding factors. Notably, many of the association became non-significant after further adjusting for disease severity at presentation. Multiple variable-adjusted ORs of MACEs were 0.77, 0.67, 0.48 and 0.59 respectively in patients with 1, 2, 3 and 4 medications in comparison with patients with none, and other clinical outcomes showed the same trend (P for trend < 0.05). There was no significant differences except that 95% CI were generally wider, when the association were analyzed among patients with and without history of cardiovascular disease separately.

CONCLUSIONS Prior use of four preventive medications may reduce the severity of disease and in-hospital adverse outcomes in those who do develop an ACS anyway while taking these medications. The beneficial effect of prior use of these medications may be mainly mediated through increasing the likelihood of developing a less severe ACS when this doses occur.

GW27-e0885

The correlation of plasma B-type natriuretic peptide with inflammatory factors in patients with acute coronary syndrome

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OBJECTIVES To observe the correlation of plasma B-type natriuretic peptide, interleukin 6, tumor necrosis factor α and high sensitivity C reactive protein in patients with acute coronary syndrome.

METHODS 162 patients with acute coronary syndrome were consecutive selected, including ST segment elevation myocardial infarction (STEMI) 98 cases, non-ST segment elevation myocardial infarction (NSTEMI) 39 cases, unstable angina pectoris (UAP) 25 cases and 160 healthly controls. Blood samples were collected from patients and controls, plasma BNP was measured by chemiluminescence immunoassay, the contents of IL-6, TNF-α was determined by ELISA and hs-CRP by immune turbidimetric method. Rule out infectious diseases, cancer, collagen diseases, application of immunosuppressive drugs.

RESULTS ACS group BNP, IL-6, TNF-α, hs-CRP levels were significantly higher than the control group (P <0.01).

CONCLUSIONS BNP and inflammatory factors IL-6, TNF-α, hs-CRP in ACS patients was significantly higher and BNP was positively correlated. with inflammatory factors IL-6, TNF-α, hs-CRP.

GW27-e0902

Prehospital activation by "WeChat" in community hospital for seamless transfer bypassing emergency department in patients with acute myocardial infarction

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OBJECTIVES Prehospital identification of acute ST-elevation myocardial infarction (STEMI) and activation of the cardiac catheterization laboratory (CCL) can improve first medical contact-to-balloon (FMC2B) times. We describe regional collaborative network for STEMI based on WeChat to provide seamless transfer bypassing emergency department for primary percutaneous coronary intervention (PCI). The purpose of this study was to examine the effect of 12-lead electrocardiogram (ECG) transmission via WeChat on FMC2B times.

METHODS A retrospective, consecutive cohort study was conducted on 94 STEMI patients who were initially seen in community or non-PCI-capable hospital, transferred for primary PCI at Luhe hospital, a rural hospital, which serves an area of 1.35 million inhabitants, from July 1, 2015 to March 31, 2016. Two groups were divided according to the different pathways to the CCL: WeChat group had 36 patients with a prehospital 12-lead electrocardiogram transmission via WeChat, taken by emergency medical system (EMS) and transferred directly to CCL of Luhe hospital, control group had 58 patients who transferred by EMS to emergency department before CCL arrival. The primary outcome was median FMC2B times and the secondary outcome was door to balloon (D2B) times.

RESULTS In the WeChat group versus the control group, the median symptom onset-to-first-medical contact time was similar (118 [96-155] vs. 112 [90-142] min, p>0.05), but the median FMC2B and D2B were significantly shorter (90 [70-129] vs.120[90-160]min, p < 0.001; 32 [20-60] vs.65 [46-103]min, p < 0.001,respectively). There is no differences in time to reperfusion once the CCL was reached.

CONCLUSIONS Prehospital activation of the CCL via WeChat resulted in earlier reperfusion of STEMI patients.

GW27-e0918

The value of ADP-induced platelet-fibrin clot strength for the prediction of clinical outcomes and side effects in ticagrelor treated ACS patients

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OBJECTIVES This study aimed to display the value of ADP-induced platelet-fibrin clot strength (MAADP) for the prediction of clinical outcomes and side effects in ticagrelor treated ACS patients.

METHODS Consecutive ACS patients on duel antiplatelet treatment (DAPT) with ticagrelor and aspirin were recruited. After 3 to 5 days maintenance dose of ticagrelor administration, MAADP, measured by thrombelastography (TEG), were recorded for the evaluation of ticagrelor anti-platelet reactivity. The pre-specified cutoffs of MAADP > 47mm for high on-treatment platelet reactivity (HTPR) and MAADP < 31mm for low on-treatment platelet reactivity (LTPR) were applied for the evaluation. The occurrences of the ischemic events [including major ischemic events(cardiac death, non-fatal myocardial infarction, stroke, unexpected coronary revascularization, and stent thrombosis) and composited ischemic events (major ischemic events and