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Short-term effects of air pollution on acute myocardial infarction in Shanghai, China in 2013-2014

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OBJECTIVES Although particulate matter with diameter smaller than 2.5μm ($PM_{2.5}$) and 10μm (PM_{10}) and other pollutants have been associated with cardiovascular morbidity and mortality, the effect of pollutants on acute myocardial infarction (AMI) have rarely been addressed in Asia and Pacific Region, especially in Shanghai, China.

METHODS A total of 972 Emergency Medical Service-assessed and self/taxi-driving cases in Pudong District, Shanghai City between 1st November, 2013 and 27th April, 2014 were obtained from the Shanghai Emergency Medical Center Register. A case-crossover design was used to analyze exposure to air pollution and the risk of AMI. Exposure to $PM_{2.5}$, PM_{10}, nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and carbon monoxide (CO) was defined as the mean urban background level. The association among AMI admission, all above pollutants, temperature and relative humidity were analyzed by correlation and logistic regression.

RESULTS $PM_{2.5}$, PM_{10} and CO in urban background were associated with an increased risk of AMI for all time windows, whereas NO_2 and SO_2 were not. The respective odds ratio (confidence interval) of $PM_{2.5}$ for AMI was 1.16 (1.03-1.29), of PM_{10} was 1.05 (1.01-1.16), of CO was 1.08 (1.02-1.21), of NO_2 was 0.82 (0.75-1.02), and of SO_2 was 0.87 (0.63-1.95). With the increase of air quality index (AQI), more AMI occurrence were found. Of the time windows, there were more AMI patients between 6:00-18:00 and outdoor period. There was no correlation between fluctuation of temperature, relative humidity and AMI hospital admission.

CONCLUSIONS Short-term exposure to moderate-serious pollution is associated with an increased risk of AMI. The increase of $PM_{2.5}$, PM_{10} and CO concentration has relation to the increase of AMI admission.

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Pre-hospital Management in Chinese Patients with Acute Coronary Syndrome: Findings from the EPICOR Asia Study

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OBJECTIVES Contemporary pre-hospital management in Chinese patients with acute coronary syndrome (ACS) remains unclear. In this subanalysis of EPICOR Asia study, we report baseline pre-hospital management patterns of ACS patients in current real-world practice in China.

METHODS EPICOR Asia (NCT01361386) is a prospective, multinational, observational, cohort study to describe antithrombotic management patterns in Asian patients with ACS who survived to hospital discharge, including pre-hospital, hospital and post-discharge management. A total of 12,922 patients were enrolled from 218 centers in 8 countries or regions from 06/2011 to 05/2012, and 8214 patients (3961 [48.2%] STEMI, 1316 [16.0%] NSTEMI, and 2938 [35.8%] UA patients) were from 107 centers in China. This subanalysis was based on the Chinese population data.

RESULTS A pre-hospital electrocardiogram was done in 3422 (41.7%) patients (52.0% of STEMI, 42.7% of NSTEMI, and 27.3% of UA patients). Pre-hospital medication was given to 803 (9.8%) patients (13.6% of STEMI, 12.2% of NSTEMI, and 3.6% of UA patients). Pre-hospital thrombolysis was given to only 1.0% of STEMI patients. The most commonly used antiplatelet agents were aspirin (867 [10.6%] patients) and clopidogrel (801 [9.8%] patients) in total ACS patients. Pre-hospital aspirin and clopidogrel were given to 14.1% and 13.4% of STEMI, 11.6% and 11.1% of NSTEMI, and 5.3% and 4.2% of UA patients, respectively. A small percentage of patients received pre-hospital anticoagulant therapy, the most common of which was low-molecular-weight heparin.

CONCLUSIONS Pre-hospital management is more frequent in STEMI and NSTEMI patients than in UA patients. Pre-hospital initiation of antiplatelet agents remains relatively infrequent. Improvement in the pre-hospital management of Chinese ACS patients is necessary.

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Strategies for Patients with Acute Myocardial Infarction Presenting as Out-of Hospital Cardiac Arrest

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OBJECTIVES Many patients with acute myocardial infarction (AMI) presented as out-of hospital cardiac arrest (OH-CA). What are the best options for these patients? Which strategies would give them to best chance of full recovery?

METHODS 112 consecutive patients who presented to our institution from February 2011 to Dec 2013 with OH-CA and subsequently diagnosed to have AMI by electrocardiographic (EKG) criteria (ST segment elevation) or elevated serum troponin were included. Their characteristics (demographic information, past medical history, medication history, treatment history) and outcome were tabulated. Statistical analysis (Fisher's exact test for categorical variables; two-sample t-test for continuous variables) were performed to find the variables which were associated with in-hospital survival.

RESULTS Out of 112 patients, 63(56%) were alive at discharge while 49(44%) died during hospitalization. The patients that survived to discharge were younger (5911 years vs 659.5 years, p=0.0041). There was no difference in survival based on sex, body mass index or race. Previous history of cardiovascular disease, heart failure, revascularization, diabetes, hypertension, dyslipidemia, cigarette smoking did not significantly adversely affect survival to discharge. Patients already on aspirin, beta blockers, angiotensin-converting enzyme inhibitors, statin and warfarin did not have a survival advantage. Cardiac arrest pre-hospital, presence of shock at first medical contact, lower systolic blood pressures on presentation, higher initial serum troponin were associated with worse survival. Patients treated with therapeutic hypothermia fared worse than those patients that were not cooled, with 80% mortality in the hypothermia group compared to 20% mortality in the other group. The two methods of cooling for therapeutic hypothermia used in our institution did not significantly affect survival to discharge. Patients that underwent diagnostic coronary angiogram and percutaneous coronary intervention (PCI) were more likely to alive at discharge. The type of stent- bare metal or drug-eluting did not confer a survival advantage.

CONCLUSIONS Patients with OH-CA who arrived to the hospital with acceptable blood pressure (no cardiogenic shock) and were able to undergo coronary angiogram for PCI had higher chance for survival. Induced hypothermia did not improve the chance of survival.

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Influence of platelet to lymphocyte ratio on short-term prognosis in patients with acute myocardial infarction

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OBJECTIVES To investigate the influence of platelet to lymphocyte ratio (PLR) on short-term prognosis in patients with acute myocardial infarction(AMI).

METHODS One hundred and thirty-five patients were divided into low PLR group (PLR<170, n=85) and high PLR group (PLR>170, n=51) according to their PLR level, which was calculated according to blood platelet count and lymphocyte count on admission. Clinical data were collected in two groups of patients such as age, sex, smoking, diabetes, hypertension, hyperlipidemia, and reperfusion therapy. The differences of in-hospital mortality, angina readmission rate and 1-year mortality were compared between groups.

RESULTS There were no significant difference of clinical data such as age, sex, smoking, diabetes, hypertension, hyperlipidemia, and reperfusion therapy (P>0.05). Compared with the low PLR group,