Author’s response to reviews

Title: Rapid Predictors for the Occurrence of Reduced Left Ventricular Ejection Fraction between LAD and non-LAD related ST-Elevation Myocardial Infarction

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To Reviewer 1:

(1) Patients with multi-vessel stenosis represent 50-60% of the population. This could be an important confounding factor in the results. Nevertheless in non-LAD group multi-vessel disease is a significative predictor of reduced EF at multivariate analysis. How multivessel was defined? Patients with culprit lesion non-LAD had LAD critical stenosis? On the other side patients in LAD group with multivessel disease had critical lesion on RCA or LCx? Please report these data, moreover a sensitivity analysis excluding patients with critical multi-vessel disease could give more strength to your conclusions?

Reply: Thank you very much for your question. The definition of multi-vessel disease was added in methods. As we know, AMI patients in real word are quite complicated, including different extent of stenosis in non-culprit vessels. The role of multi-vessel disease was similar to proximal disease, elder age, time to hospital and so on. Analysis excluding patients with multi-vessel disease might limit the application of our conclusion. In our study, prevalence of multi-vessel was approximately balance (51% vs.61%) between LAD and non-LAD groups. Some detailed
data was added in Table 1. The most important method to reduce the confounding effect was multivariate logistic analysis, which was performed in our study.

Compared with single-vessel non-LAD AMI patients, the incidence of cardiac dysfunction was significantly higher in non-LAD patients with multi-vessel disease. While we excluded the multi-vessel in non-LAD AMI patients, logistic analysis was also performed. The results demonstrated that time to hospital (OR=1.291, P=0.032) and post-PCI SBP<100mmHg (OR=2.783, P=0.046) were major independent predictors for reduced LVEF.

(2) Please specify the primary and secondary end-point and how many days after PCI the echocardiography was performed (4-6 days)

Reply: Thank you. We have added these descriptions.

(3) By-pass graft occlusion was excluded?

Patients with multi-vessel stenosis represent 50-60% of the population. This could be an important confounding

Reply: AMI with by-pass graft occlusion were excluded.

Answers about multi-vessel stenosis were shown in Reply (1).

(4) It is not necessary to repeat the enrolment period (page 8 line 31) please delete;

There were any differences in baseline clinical or angiographic characteristics between LAD and non-LAD group? Does LAD group have a significantly reduced EF compared with non-LAD group?

Reply: Thank you for your suggestion, enrollment period was deleted.

There were no significantly about baseline characteristics between LAD and non-LAD group, such as age (63.2±12.2 vs. 64.8±11.5, P=0.115), male (80.6% vs. 81.1%, P=0.892), diabetes (51.4% vs. 45.6%, p=0.140) and so on. The date of EF between LAD and non-LAD AMI was demonstrated in Result 3.1.
To Reviewer 2:

(1) It is unclear the aim of the study in the abstract, please add and improve it.

Reply: Thank you for your suggestion. We re-edited this abstract.

(2) Some data from registries to better describe the long-term prognosis of patients with STEMI and undergoing primary PCI may improve introduction and discussion (e.g. Arch Intern Med 2011;171:1948-9).

Reply: Thank you. We have added it.

(3) The main limit of the study is the timing of echocardiography. It is well known that LVEF may significantly improve 1-3 months after primary PCI. Do you have data of the follow-up?

Reply: Thank you for your suggestion. Follow up data is under collecting. We will plan to collect cardiac events, 6-month to 12-month echocardiography and serum biomarkers. These data will be submission in another article.

(4) Please give more data regarding echocardiography. All exams are performed by the same operator? The operator was blinded to primary PCI and outcome.

Reply: All exams are performed by one of three echocardiography operators. These three operators underwent standardized training before this study. They were blinded to the clinical and angiography data.

(5) Prior MI was exclusion criteria?

-How do you manage in your analysis patients with LVEF depression before primary PCI?

-Are all patients with preserved LVEF before hospital admission?

Reply: Prior MI was excluded, which was shown in method 2.1.

Prior confirmed clinical heart failure, such as NYHA II-IV, was excluded.
(6) -Do you have data regarding ST-segment resolution? This data is related to LVEF?

-Do you have data regarding cardiac marker release? They are related to LVEF?

-Please repeat your analysis putting as endpoint AUC of cardiac marker release. The data is similar?

Reply: Thank you very much for your very well suggestion. At the beginning of this study, we planned to build a rapid system to distinguish the high risk of cardiac dysfunction immediately at patient admission or coronary angiography process. Therefore, the data of ST-segment resolution and serum troponin T post-PCI, which was record after PCI, were not analyzed in this prediction system. However, we really admit that your suggestion will be benefit for system improvement, which we will take into account in further research.