Author’s response to reviews

Title: Association between Coronary Dominance and Acute Inferior Myocardial Infarction: a Matched, Case-control Study

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 Responses for the Reviewers:

I Akin (Reviewer 1): Congratulation to this interesting work. However, I have some minor comments:

1. Are there any Information on inferior myocardial infarction with left coronary dominance in your data base?

Response: Thank you for your great idea. In 265 patients with acute inferior myocardial infarction, the proportion of right-coronary, co-dominance and left coronary dominance were 93.96% (249), 1.51% (4) and 4.53% (12), respectively. Therefore, we combined the latter two groups due to the much smaller sample size. We will try to collect more patients with co-dominance or left coronary dominance for further investigations in the future.
2. What about the survival rate of inferior myocardial infarction in right-coronary, balanced Status and left coronary dominance. Have you got any Groups to compare in your database?

Response: Thank you for your suggestions. This is a limitation for case-control study. The patients’ information were obtained from the electronic health records, therefore, the outcomes were unavailable. We will follow up these patients in the future to verify the relationship between coronary dominances and prognoses.

3. Any Information of VT/VF or AV-block?

Response: Our database had the information of ventricular tachycardia (VT), ventricular fibrillation (VF) and atrioventricular block (AV-block) of the 265 patients with acute inferior myocardial infarction. The total incidence of VT, VF and AV-block were 6 (2.26%), 5 (1.89%) and 19 (7.17%), respectively. In right-coronary dominance group (n=249), the incidence of VT, VF and AV-block were 5 (2.01%), 5 (2.01%) and 19 (7.63%), respectively. In the co-dominance and left coronary dominance group (n=16), the incidence of VT was 1 (6.25%), and there was no VF and AV-block patient. As you may find, the incidence of VT/VF and AV-block were too low to perform the analysis. But of course we will pay attention to arrhythmia in our future research.

Jacek Bil, MD, PhD, FESC (Reviewer 2): Authors investigated whether coronary dominance was associated with the incidence of acute inferior myocardial infarction (MI).

1. Do authors have any data showing not only the impact of right dominance on the inferior MI incidence, but also the survival and prognosis after inferior MI?

Response: Thank you for your great suggestions. Initially, our team would like to analyze the survival and prognosis after inferior MI. However, this was a case-control study and the data were obtained from an existing CAG database, so the outcomes of patients were unavailable. We will follow up the prognosis of these patients and perform the analysis in the future.

2. Why authors matched patients in 1:2 ratio, not 1:1?

Response: Thank you for your concern. In case-control studies, we can use individual matching to achieve higher research efficiency with a smaller sample size. Researchers often use 1:M
matching method, where M is the number of matches for each case. The greater the M value, the higher the efficiency, but generally not more than 4. In this study, we used age and sex matching, and we matched up to 1:2 at most in the current control group. Such research efficiency will be higher than that in 1:1 case-control study.

3. Was there any difference between STEMI and NSTEMI?

Response: Thank you. It is also one of our primary goals at the beginning to investigate the impact of right coronary dominance on STEMI and NSTEMI subtypes and look for whether there is a difference between two subtypes. However, the proportion of NSTEMI was relatively low in patients with acute inferior myocardial infarction. Conditional logistic regression model requiring the number of NSTEMI events in the population should exceed the number of covariates by at least ten-times. Therefore, if the participants were grouped according to STEMI and NSTEMI, insufficient adjusted variables would not guarantee the clinical significance of the association. We will try to collect more cases to study the relationship between right coronary dominance and STEMI/NSTEMI subtypes in the future.

4. Could authors be a bit more precise in inclusion and exclusion criteria? What were the chronic and systemic diseases? What kind of arrhythmias were the exclusion criterion?

Response: Thank you for your concern. I am sorry for the unclear description. The chronic and systemic diseases in exclusion criteria included hepatic failure, kidney failure, hypothyroidism and Grave's disease. Arrhythmias in the exclusion criteria indicated ventricular fibrillation.

We have revised the inclusion and exclusion criteria in the manuscript and figure 1 as below.

Inclusion criteria: 1) Over 18 years old, 2) Cases were first-ever acute myocardial infarction, 3) Controls were undergoing CAG and stenosis of coronary artery<30%, 4) Completed CAG data medical records. Exclusion criteria: 1) Previous coronary artery bypass graft surgery, 2) Ventricular fibrillation, 3) History of chronic or systemic diseases (including hepatic failure, kidney failure, hypothyroidism and Grave's disease), 4) Known allergy to iodinated contrast agent.