Author's response to reviews

Title: Non-invasive evaluation of myocardial reperfusion by transthoracic Doppler echocardiography and single-photon emission computed tomography in patients with anterior acute myocardial infarction

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Dear reviewer Dr. Quirino Ciampi and Dr. Rosa Sicari,

Thank You for the answers and major suggestions. We want to comment and answer the raised questions.

First of all comments to Dr. Q.Ciampi suggestions:

1. In our clinical practice (Vilnius University Santariskiu Clinics) stress tests for CFR assessment are performed only with adenosine infusion. Unfortunately, we don’t have any experience with dypiridamole. Thus, CFR was evaluated using adenosine infusion and the myocardial contractile reserve - with dobutamine infusion.

2. We followed the advice to reduce the length of the introduction section and added at the end the aim of the study.

3. During the administration of the same adenosine infusion at a rate 140 µg/kg/min for six minutes spectral Doppler signals of the coronary flow in the distal portion of the LAD were recorded 60 s after the onset of the infusion for CFR off-line analysis and afterwards the infusion of adenosine was continued for myocardial perfusion stress imaging. After the completion of adenosine infusion chocolate milk was given for the patient.
4. As it was suggested, we replaced the figure 1 with 2 examples:

1) Figure 1 (A and B) – the patient with preserved myocardial contractile reserve and viability and preserved coronary flow reserve;

2) Figure 2 (A and B) – the patient with absence of myocardial viability and with extensive myocardial perfusion defect and impaired CFR.

The comments to Dr. R. Sicari suggestions:

1. As it is mentioned in above comments, we rephrased the aim of the study and added at the end of introduction.

2. The selection criteria of the patient population under investigation were revised and clarified in the manuscript.

3. The revascularisation by PCI with stenting was performed within 12 hours from the onset of chest pain in all the study patients. This information was clarified and added into the manuscript.

4. We clarified how patients were assessed for successful reperfusion at 5 months follow-up: 3D Echo, dobutamine stress echocardiography (DSE), CFR, gated-SPECT evaluation were performed.

5. We presented the results from Table 2. Correlation between CFR and parameters of LV function and perfusion in graph format (Figure 4). We want to clarify if this mode of data presentation is acceptable for you? Furthermore, we analysed the strength of the relationship between early assessed CFR, the final infarct size (TPD) and myocardial viability at follow-up. The results are presented in Table 4.

6. Yes, we used 3D echocardiography at FU.

7. We estimated the cut-off value of CFR during the acute MI phase and evaluated its predictive value of LV functional recovery, myocardial viability and the final infarct size at follow-up. However, in our study no patient had CFR # 2 three days after myocardial reperfusion. During the acute MI phase in the group with preserved CFR the highest value of CFR was 1.95; in the group with impaired CFR the lowest value was 1.32. A value of CFR > 2 is a normal value, which is common for the remote MI period.

8. Following the advice we reduced significantly the length of introduction and made it more focused. Also the discussion section was shortened as it was suggested.

9. Also we would like kindly to ask, if it is possible to add one more author to the
list of the manuscript co-authors: Sigita Aidietiene, an expert in echocardiography, MD, PhD, assistant professor in Clinic of Cardiac and Vascular Diseases, Faculty of Medicine, Vilnius University. This doctor was really helpful with huge input when analysing and making corrections to the manuscript on the basis of your suggestions. We would be grateful.

Best regards

On behalf of the authors

Egle Sadauskiene