Reviewer’s report

Title: Effect of Pre-discharge cardiopulmonary fitness on Outcomes in Patients with ST-Elevation Myocardial Infarction after percutaneous coronary intervention

Version: 0 Date: 04 May 2019

Reviewer: L Compostella

Reviewer's report:

The paper deals with a very interesting topic: long-term prognosis of patients after an STEMI treated by primary PCI and submitted to structured and comprehensive cardiac rehabilitation. It is particularly relevant that the number of study cases is high, and the follow-up period is rather prolonged.

The text is overall well written, and the methods are correct.

Major comments:

- The title of the paper focuses on individualized exercise prescription during phase 1 cardiac rehabilitation. This is indeed a very interesting issue, and the high number of patients involved in the study could give an important highlight on the topic and a specific recommendation. Unfortunately in the paper (especially in Discussion), it seems to me that little space is given to this topic, while greatest relevance is given to long term prognosis of STEMI patients based on their exercise tolerance. This is another very interesting topic, not well developed till now in literature (at least not well studied with CPX), but it is different from what is written in the title.

Furthermore, in Introduction (page 3, lines 43-48) the Authors write "we reviewed the efficacy and safety of individualized exercise prescriptions in Phase I cardiac rehabilitation". It seems to me that no evaluation of efficacy and safety of this kind of individualized CR was performed (no new CPX was performed after discharge from phase 1 CR to evaluate CRF improvement (or not) after exercises individualized on CPX parameters), while (as written above) focus was on long term prognosis.

I invite the Authors to evaluate what could be the most relevant topic that they will analyze with this study, and modify accordingly at least the title and the purpose of the study. In my humble opinion, it could be easier to modify title and aims (and conclusions), focusing on long term prognosis of STEMI pts according to their initial (post-STEMI) VO2 at AT, or W-max, or VE/VCO2 slope.
- It is somehow disappointing that the Authors did not find significant differences between IEP and NIEP groups, regarding incidence of cardio-genetic death, re-hospitalization, heart failure, stroke, or atrial fibrillation (page 5, lines 50-52). Thus, it seems that individualized exercise could not give any major advantage, except for total MACE. I ask the Authors to give some comments on this in Discussion.

- In my humble opinion, instead of the Fig. 1 and Fog. 2, that report ROC for some CPX parameters, it could be more easily understandable for readers if the Authors could present Kaplan-Mayer curves of survival, or of MACE-free. Could the Authors consider to substitute the figures?

Minor observations:

- Methods (page 3 line 54): "This retrospective study …": the Authors describe this study as a retrospective one; but I do not understand if this statement is really correct, as the Authors describe elsewhere that they made a telephone follow-up (page 5, line 13), and the patients have been offered the opportunity to choose between individualized exercise prescriptions (page 4, line 13). Please give explication of these apparent incongruity.

- Page 3, line 17-21: "PCI operation leads to coronary spasm, endothelial cell injury, and even restenosis or thrombus; moreover, a poor prognosis may still exist in patient with STEMI after PCI [4]." I suggest to modify the sentence in a more "soft" way, for instance writing that PCI "may lead to …". Furthermore, prognosis after PCI is indeed much better than in cases of now revascularization or in conservative treatment. Another thing to remember is that cardiac rehabilitation improves prognosis after PCI, but may not be considered as an alternative to PCI, as it could be argued by the present formulation of this and following sentences.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes
Are the conclusions drawn adequately supported by the data shown?  
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?  
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I recommend additional statistical review

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