Author’s response to reviews

Title: Glucose levels as a prognostic marker in patients with ST-segment elevation myocardial infarction: a case-control study

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Reviewer’s report

Title: Glucose levels as a prognostic marker in patients with ST-segment elevation myocardial infarction: a case-control study

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Dear Editor,

I am pleased to resubmit for publication the revised version of “Free fatty acids, oxidized LDL, and multivessel coronary disease in myocardial infarction”. I appreciated the constructive criticisms of the reviewers. I have addressed each of their concerns as outlined below.

Reviewer #2: There are some serious concerns which needs to be addressed before the manuscript can be considered for publication
1. Diabetes is known for long as a traditional risk factor for cardiovascular disease and myocardial Infarction (MI). There are enough evidence in the literature also and also it is well understood in the field. So the rationale of the study design is not appropriate in a case-control set up. It would make some sense, if the glucose levels are monitored in a prospective manner. Not just the day before the patients got admitted and also time based follow ups after the procedure. That may lead to interesting observation.

Answer: We would like to emphasize that exactly the glucose level when admission is reviewed as a peculiar universal marker of poor prognosis. Attaching significance to this indicator we emphasize the possibility to use it as a tool of rapid response, which is especially actual for patients with acute coronary syndrome. Obviously, You are right about the importance of blood glucose in prospective aspect as it reflects not only the dynamics of carbohydrate metabolism state, but the patient’s condition in general, but we made the main focus exactly on glycaemia at admission.

2. For diabetic status; glycosylated hemoglobin HBA1c should be measured in all the patients.

Answer: We apologize, the missing information is supplemented.

3. Table 1 is really confusing and hard to understand.

Answer: Table 1 contains very important characteristics of patients in comparative aspect (taking into account the distribution by glycaemia level). The table is presented in landscape layout. We hope this format will facilitate information perception.

4. Correlation performed in Table 5 have no statistical measures which is a serious concern. So the U shaped inference is far extrapolated I suppose. The authors should perform multiple testing and a proper statistical correlation to show a u shape curve.

Answer: Thank you for the comment. The indicated U-shaped relationship is only a visual representation of the revealed connection between glycaemia level and cases of fatal outcomes. We have supplemented the material with a graph showing this correlation.
Reviewer #3:

In the manuscript entitled "Glucose levels as a prognostic marker in patients with ST-segment elevation in myocardial infarction: a case-control study", the authors investigate the role of hyper and hypoglycemia in in-hospital and 1 year prognoses in patients with ST-segment elevation MI. The authors included 529 patients in their case-control study. They found that hyperglycemia (both in patient with and without diabetes) affects the short and long-term prognosis. In patients without diabetes the relationship between hyperglycemia and in-hospital prognosis show a linear relationship, while in diabetic patients it shows a U-shape relationship. The authors suggested that blood glucose levels in patients with MI may represent a predictor of adverse outcomes.

Although the study is interesting and generally well designed, some finding (the U shape relationship between hyperglycemia in-hospital prognosis in diabetic patients) is in disagreement with the current literature.

We sincerely thank the reviewer for the work performed on the article and for the comments.

1. The study presents some limitations that should be addressed and that could have influenced the results of the study.

   Some important clinical characteristics of Patients are missing:
   
   Did a patient have a previous heart failure?
   
   Did a patient have a previous myocardial infarction?
   
   Was a patient a smoker?

   Answer: We apologize, the missing information is supplemented (concerning the smoking status, the presence of heart failure and previous myocardial infarction). 41 (7.9%) patients revealed heart failure before, 124 (23.9%) had previous myocardial infarction, 213 (41.0%) smoked.

2. Important confounding factors were not taking in account the data analysis:

   Due the circadian variation of blood glucose, did the author have a record of the time when the blood glucose was measured at admission to hospital?
What was the time since the last meal?

Answer: Blood sampling time as well as the time after meal was obligatory recorded in medical records. However we would like to emphasize that blood glucose level at admission time has a particular practical utility exactly due to the possibility to use this indicator independently of the time of day and the time elapsed after meal, allowing to estimate the prognosis in patients in the acute situation. In our opinion, such universality and fast ability to predict are especially valuable in acute coronary syndrome.

3. Was a patient taking medications that affect glucose metabolism?

Answer: Yes, most of the patients regardless the diabetes presence were taking medications which potentially affect glucose metabolism, in particular 495 (95.2%) patients were taking β-blockers, 317 (61.0%) - statins, 176 (33.9%) patients - thiazide diuretics.

4. Were the diabetic patients taking anti-diabetic medication?

Answer: Diabetic patients in 19 (19.2%) cases were on diet therapy, 59 (59.6%) were taking antihyperglycemic medication (mostly sulfonylureas group) and 15 (15.2%) were taking insulin, 6 (6.0%) were taking antihyperglycemic medication and insulin.

Minor:

Table 1 and 2 are difficult to read. It would help to change the page orientation.

Answer: Thank you for the comment. Tables 1 and 2 are presented in landscape layout.