Reviewer’s report

Title: Increased Mortality with Myocardial Infarction and Kidney Dysfunction: the Contribution of Gaps in the use of Guideline-Based Therapies

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Reviewer: Jean-Pierre Bassand

Reviewer’s report:

This is a very interesting paper about the outcome of patients suffering from myocardial infarction (MI) with or without ST segment elevation, included in the PREMIER registry, according to degree of renal dysfunction and adherence to guidelines-recommended therapies.

This report confirms that the vast majority of patients suffering from acute coronary syndromes (ACS) have mild to severe renal dysfunction, with about one third of patients suffering from moderate to severe renal dysfunction.

It confirms furthermore that there is a gradual deterioration in outcome, depending on the degree of renal dysfunction.

Lastly, it shows that patients with renal dysfunction, particularly moderate to severe, do not receive guidelines-recommended therapies.

The question is therefore to determine whether or not under-use of recommended therapies has any impact on the outcome.

According the authors, the answer is no: after adjustment, the excess of events, particularly in severe renal dysfunction, is not accounted for by the under-use of medical therapies.

Although this paper presents many strong points, it also suffers from a few weaknesses.

- Among the strong points is the fact that the authors took into account eligibility of patients for medical therapy (in most reports heretofore, this was not taken into account).

- The authors carried out robust adjustment on the majority of baseline characteristics, as well as on therapies and interventions currently given as routine treatment for ACS.

- Among the weaknesses is the fact that revascularization is not considered as a guideline-recommended therapy in this report. Undoubtedly, revascularization in both ST and non-ST elevation ACS has a strong impact on outcome. It would seem plausible that in this registry, just like in any other, the patients initially in the lowest risk group received optimal therapy, including access to invasive strategy and revascularization.
It is clear from this report that the patients with severe renal dysfunction were denied access to angiography, and were denied revascularization / reperfusion.

In this case, regarding access to invasive strategy and revascularization / reperfusion, the eligibility of the patients is more difficult to assess, because it’s mostly dependent on the subjective judgment of the attending physician.

Nevertheless, this represents a huge bias, and it is likely that re-analyzing the data according to the rate of recommended therapies per group, including revascularization / reperfusion, would produce slightly different results.

Admittedly, no randomized trial has ever been carried out to assess the benefit of revascularization / reperfusion specifically in renal failure in ACS. The lack of data is simply due to the fact that patients with renal dysfunction are usually not included in clinical trials, especially those with severe renal dysfunction.

All in all, this study, although extremely well conducted, suffers unfortunately from a major bias regarding access to revascularization / reperfusion, which was included in the adjustment analysis, but not as an element of guidelines-recommended therapies.

Major compulsory revisions:
Re-analysis of the data considering revascularization / reperfusion as a guidelines-recommended therapy.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.