Reviewer's report

Title: The impact of administration of tranexamic acid in reducing the use of red blood cells and other blood products in cardiac surgery.

Version: 1 Date: 27 February 2006

Reviewer: Valter Casati

Reviewer's report:

General
GENERAL CONSIDERATIONS
-The authors performed a retrospective study on tranexamic acid administration to patients submitted to primary cardiac surgery.
Because of the large number of patients considered, this is the first study adequately powered to investigate not only the effects of the drug on perioperative allogeneic transfusions, but also the relationship between tranexamic acid and the number of patients requiring re-exploration for bleeding. In my opinion, this is the most important result of the study: tranexamic acid administration determines a significant reduction of the number of patients needing surgical re-exploration for excessive bleeding.

Even if the statistical analysis is well done, because of the observational typology of the study and the consequent lacking of randomization, and seen the analogies with the very recently published study of Mangano and colleagues: “The risk associated with aprotinin in cardiac surgery”, The New England Journal of Medicine 2006;354:353-65, the authors would analyze their results with the “propensity score analysis”, quote the work of Mangano in their Bibliography, and compare their results with that reported by Mangano and colleagues.
-Why the authors did not consider postoperative blood loss among the main outcome measures, not reporting this important variable in any part of the paper?
-Do the authors can report some data regarding perioperative acute myocardial infarction and/or acute renal failure?

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
SPECIFIC CONSIDERATIONS
-Page 3, lines 12-15. When the authors consider not indicated the use of aprotinin?
Page 3, line 9. The # 9 and 10 of the Bibliography are missing in the text.
-Page 7, last line. In the opinion of the authors, what is the reason of the apparently protective effect of aspirin on bleeding?

Aspirin is generally considered to increase the risk of excessive bleeding.
-Page 8, line 1-2. What are the reasons of the significant influence of anesthetists and surgeons on transfusions? It seems that this fact would be related with a scarce adherence to the institutional transfusion protocol.

-Page 8, lines 17-18. Why the anesthetist was found to be not significant in the multivariate model, and significant in the univariate logistic regression?

-DISCUSSION. In general, this section is excessively long. Furthermore it must be rewritten addressing some recent observations (see above regarding the study of Mangano and coworkers).
-Page 12, lines 10-14. It is true that the better doses for tranexamic acid are still under discussion, but some study of pharmacokinetic on tranexamic acid are present in literature. Please, discuss for example the work of Dowd and coworkers who evaluated pharmacodynamic profile and the possible better type of administration and doses for tranexamic acid. (Anesthesiology 2002;97:390-9).
- The authors must discuss the possible reasons of why the 20 % of the patients did not receive tranexamic acid.

- BIBLIOGRAPHY. Please, cite in the text the references # 9-10, or delete them in the Bibliography.

TABLE 2. Please correct the p value referring to “All patients” (first variable in the table): the two groups are clearly different in terms of number of patients enrolled.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

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Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes