Reviewer’s report

Title: Dynamics of c-reactive protein and white blood cell count in critically ill patients with nosocomial gram-positive vs. gram-negative bacteremia: a historical cohort study

Version: 2 Date: 21 March 2007

Reviewer: Pedro Póvoa

Reviewer’s report:

On the whole this version of the manuscript of Dr. Dominique Vandijck et al. is a great improvement from the previous one and the authors answered adequately the great majority of the points previously raised.

Major Compulsory Revisions
My great concern relates to the way statistical analysis was performed as well as the BSI episodes were included. In my opinion the statistical analysis is not entirely correct as I had already pointed out and in addition it is not in accordance with the authors reply. In Response 4 they clearly stated that “only the first episode of a patient was taken into account”, however in the manuscript the authors included successive BSI episodes of the same patient as 105 BSI were analysed from 84 patients. That is to say that at least 21 BSI were repeated episodes. It is essential to know that this is a major violation of the statistical methods used. According to the SPSS user’s guide as an example, the assumption to use the Mann-Whitney U test is to test two independent random samples. And independent samples mean that the subjects should be randomly assigned to two groups, so that any difference is due to the treatment (or lack of treatment) and not to any other factors. Consequently, each patient is measured only once and belongs to one group. Presently the authors have repeated measures of the same patient and they used tests that are no robust to deal simultaneously with within and between patient variations. As a result and as the authors stated in Response 4, only one episode of BSI per patient can be included in the final analysis, to be precise 84 that is the number of patients.

Discretionary Revisions
Additionally there 2 minor issues that I recommend the authors to clarify
1. Response 1b – according to the authors new version of the manuscript 90.5% of the patients with Gram negative BSI as well as with Gram positive BSI were adequately treated. Does this mean that 9.5% of the patients were not adequately treated even after the results from the microbiology lab? The way the text is written can give such an interpretation that for sure is not correct.
2. Response 8 – the APACHE II score has only been validated as a severity score to assess the ICU case-mix and is collected at admission. In the methods the authors should state if this was the case or if it was assessed daily as a surrogate marker of organ dysfunction as it seems from their response; besides it is also important to comment on the discussion concerning an unexpected finding that the APACHE II score seems to have a protective effect on Gram negative BSI (OR,0.87; 95% CI,0.79-0.96; P=0.006) whereas that is not the case on Gram positive BSI (OR,1.10; 95% CI,1.00-1.20; P=0.044).

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, and I have assessed the statistics in my report.

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