Reviewer’s report

Title: Comparison of semi-quantitative and quantitative culture techniques for the diagnosis of catheter-related infections in newborns and molecular typing of isolated microorganisms

Version: 2 Date: 19 September 2013

Reviewer: Achim Kaasch

Reviewer’s report:

The manuscript contains interesting information about CRBSI in newborns. However, the data needs to be presented in a more coherent way and the interpretation should be more focused. Since this study explores the diagnostic accuracy of two techniques, I want to strongly encourage the authors to revise the manuscript considering the guidelines of the STARD initiative (http://www.stard-statement.org/).

Major Compulsory Revisions

1. The results section needs to be restructured. The data presented should follow a logical flow of information. For example, test performance measures based on PFGE are given (p. 12) before data on PFGE is shown. The results section would greatly benefit from a flow diagram (s. STARD recommendation).

2. The gold standard used in this manuscript is based on catheter culture by either techniques plus PFGE from catheter and blood culture. The authors have to clarify whether this means that any amount of microorganisms from a catheter was accepted in the gold standard or whether the respective cut-offs were used. Furthermore, it needs to be explained why the gold standard is based on antibiotic susceptibility patterns and not PFGE. Most readers would agree that it makes more sense to base the gold standard on PFGE since this is the more accurate method.

3. The manuscript leaves out some interesting information. Readers would like to know more about the cases not included in the study (e.g. the reasons why patients were not included in the study due to missing blood culture, missing clinical information etc.) and about the cases without CRBSI (e.g. in how many cases discordant organisms were isolated from catheter and blood).

Furthermore it would be interesting to know how many patients received antibiotic therapy through the catheter which could potentially reduce detection.

4. In the results section it remains unclear from which numbers the measures of sensitivity and specificity are calculated. It would be helpful to give a 2x2 table (test vs. gold standard) or include the information on case numbers in the flow diagram.

5. The discussion section needs to be more focused. E.g. the discussion of
antibiotic susceptibility, esp. ESBL, does not fit to other parts of the manuscript. In the discussion section results should be interpreted and not merely repeated as has been done in several places.

Minor Essential Revisions

1. There are too many details in the Methods section. E.g. antimicrobial susceptibility testing is described in detail but it does not play a role in the manuscript. It may also not be necessary to provide all the details of PFGE, since this is a well-known and widely used method. In other places details are not sufficient: the paragraph “identification of microorganisms” refers to Koneman et al. In this citation many methods of identification are described and the reader does not know for example whether identification is largely based on manual or automated techniques.

2. Why was PFGE not done with E. coli and yeast. Please explain.

3. The tables and captions are positioned wrongly in the manuscript which makes it partly difficult to decide whether the text is supposed to be a caption or belongs to the main manuscript (e.g. p16).

4. Table 1: It should read “< 1,000 CFU” not “#1,000 CFU”

   In the discussion (p.17) it is stated that “luminal contamination is an important route of infection in long-term catheters”. Please give a reference to support this statement.

Discretionary Revisions

1. The number of subheadings in the Methods section should be reduced.

2. The figures showing PFGE can be moved to the Appendix.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.