Reviewer's report

Title: Role of Soluble Triggering Receptor Expressed on Myeloid Cells-1 for diagnosing ventilator-associated pneumonia after cardiac surgery: an observational study

Version: 1 Date: 29 October 2013

Reviewer: Troy Dominguez

Reviewer's report:

GENERAL COMMENTS:

This manuscript by Matsuna et al describes the use of a biomarker, sTREM-1 (soluble form of the triggering receptor expressed on myeloid cells), as a diagnostic test for patients with ventilator associated pneumonia (VAP) in postoperative paediatric cardiac patients. They provide data on serial measurements of TREM-1 in the serum, modified bronchoalveolar lavage fluid (BAL), and exhaled ventilator condensate (EVC) collected in postoperative patients with and without infection. There are several significant methodological concerns:

MAJOR REVISIONS:

1. The authors should state a well-defined hypothesis in the Background section (the statement that they plan to assess sTREM-1 as a diagnostic test for VAP is weakly stated).
2. Some of the statistical methodology is not appropriate:
   a. A repeated measures analysis should be performed to account for correlation between the repeated measures when looking at changes in values over time.
   b. Confidence intervals should be given to express uncertainty regarding estimates of the sensitivity and specificity.
   c. A rationale should be given for using the highest sTREM-1 values in control patients.
   d. A consideration should be given to using logistic regression to generate ROC curves for predicting VAP for the three sites where sTREM-1 was measured and identify optimum sensitivity and specificity.

GENERAL COMMENTS:

Thank you for allowing me to review this well-written manuscript by Matsuna et al that describes the use of a biomarker, sTREM-1 (soluble form of the triggering receptor expressed on myeloid cells), as a diagnostic test for ventilator associated pneumonia (VAP) in postoperative paediatric cardiac patients. The authors provide data on serial measurements of TREM-1 in the serum, modified bronchoalveolar lavage fluid (BAL), and exhaled ventilator condensate (EVC) collected in postoperative patients with and without infection. However, there are several significant methodological concerns.
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   d. Consideration should be given to using logistic regression for predicting VAP at the three sites where sTREM-1 was measured and identify optimum sensitivity and specificity.

3. The criteria for diagnosing VAP should be shortened since there is a cited reference that contains this information.

4. Why does graph 3 differ from graphs 1 and 2 when the same measurements over time were performed as in the other graphs?

5. The time of onset for VAP seems quite short (median 2 days) and no range is given. There should be some discussion as to whether this represents community acquired infection rather than nosocomial. Additionally, the rate of VAP seems very high and this is not mentioned.

Level of interest: An article of limited interest

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, and I have assessed the statistics in my report.