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

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Reviewer: Timothy Thiruchelvam

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General
The paper is well written and seeks an association between sTREM-1 profiling and the diagnosis by CDC criteria of VAP in pediatric patients' early post cardiac surgery. This is contextualized within the inherent difficulties of
1 diagnosing sepsis in this population and
2 applying current VAP diagnostic criteria
The standards for reporting data are adhered to, the discussions and conclusions are well balanced and supported by the data. This is conveyed well in the abstract, however there are some points that may enhance the readers' appreciation of their manuscript, contribution to the existing knowledge base and applicability to their patient population.

Major Comments

Background:
The last sentence of the background section should be omitted and replaced by a more explicit statement of the aim.

Methods:
Use of surgical prophylaxis for surgery (and perhaps steroids for bypass) and modified ultrafiltration (given the prevalence of pulmonary congestion) should be commented on.
CDC VAP criteria might be referenced rather than included
The data collection methods proposed observe absolute values over time for patients with or without VAP during the study period and not at the time of fulfillment of VAP criteria.
Spearmans correlation test results do not appear and could therefore be omitted (last paragraph methods)
Might a non-parametric test for repeated measures be more appropriate for changes in sTREM over time?
The authors should offer an explanation for referencing the sTREM levels in the VAP group at the time of diagnosis to the highest level in the non-VAP group
over the study period; a group that may have fewer ‘ventilator days’ and may have alternative reasons for having a non-zero level early post-op.

Results:
Reference the observed incidence of VAP (16/30, 56%) in this population (para2, Results), to that expected from published studies in similar populations (17-42 per thousand line days (stated in 1st paragraph, Background). Comment on any differences.

Given the duration of ventilation/ time to diagnosis is there potential for diagnostic overlay between community acquired and ventilator associated pneumonia? Whilst not influencing patient management the possibility should be acknowledged

Figures:
Clear tables & figures, clarification of why the EVC sTREM is represented in a different format might be beneficial to the readership.

The ROC curve does not seem to add strength to the data nor justify the conclusions.

Discussion:
The authors need to offer some explanation as to why disproportionately higher exhaled ventilator condensate compared to mBAL sTREM -1 levels are found in the presence of VAP, when no such differences are apparent from mBAL sTREM -1 data in patients with or without VAP.

References:
No concerns

Minor Comments

Results:
In light of elevated EVC sTREM in those subsequently diagnosed with surgical wound infection (Para 3, Results, sTREM-1 measurements), were other nosocomial infections diagnosed during the study period? Profiles of sTREM-1 in the children that died post-op (iPO) ought to be included in the analysis if available.

Comment was made to a lack of baseline levels of sTREM but resolution of VAP with a corresponding decrease of EVC sTREM-1 with appropriate anti-microbial therapy, might help support a potential diagnostic and prognostic role for this biomarker and modulate therapy.

Level of interest: An article of importance in its field

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

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