Reviewer's report

Title: Accuracy of Real-Time PCR, Gram Stain and Culture for Streptococcus pneumoniae, Neisseria meningitidis and Haemophilus influenzae Meningitis Diagnosis

Version: 1 Date: 15 October 2012

Reviewer: Rodrigo Hasbun

Reviewer's report:

This is an excellent prospective study evaluating the role of PCR in the diagnosis of community acquired bacterial meningitis caused by three meningeal pathogens but I have a few comments/suggestions for the authors.

Major revisions:

1) I would comment on the fact that a CSF culture was only done when the CSF WBC count was > 1,000. The Dutch Meningitis Cohort study of 696 patients documented that a CSF <1,000 was present in 29% of their patients and was a prognostic factor for an adverse clinical outcome. It is unclear if the results would be different for patients with a CSF WBC <1,000. This needs to be clarified and added as a limitation of the study.

2) In figure 1, in the last boxes, It is redundant to include both CSF culture negative and CSF culture positive cases. I would consider placing one box with CSF culture positive and the other box with CSF culture + CSF Gram stain positive

3) The utility of table 5 is questioned. There is a small sample size (n=20) in the RT PCR group that is the focus of this table and it is compared to the other two groups (All test negative and all test positive) with no statistical analyses. I would consider deleting this table and if needed adding a small section in the discussion stating that there were no significant differences between the three groups regarding key characteristics with a P value <0.05.

4) There is no mention of the potential use of Binax NOW for Streptococcus pneumoniae in the discussion given it's high sensitivity and specificity and it's cost and rapid results (<15 minutes). It would be worthwhile testing the isolates that were + for Streptococcus pneumoniae if the samples are still available.

Minor revisions:

1) Change "was" to "were" in page 13, line 6.

2) Typo in page 25, Table 4, Sensitivity of Gram stain in antibiotic negative is "1.0"?

Level of interest: An article of outstanding merit and interest 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