Reviewer’s report

Title: Meta-analysis to compare the accuracy of a molecular test with rapid culture and the WHO 2007 algorithm for diagnosis of smear-negative pulmonary tuberculosis

Version: 1 Date: 19 June 2013

Reviewer: Ming Chen

Reviewer’s report:

Diagnosis of smear-negative pulmonary TB has been an important question in the prevention and control of TB all over the world. GeneXpert and MODS are two new approaches for TB diagnosis, and their performance requires evaluation. This manuscript has discussed the accuracy of GeneXpert, MODS and the WHO 2007 algorithm on diagnosis of smear-negative pulmonary TB by conducting a meta-analysis.

The manuscript is concise and clear. However, some mistakes lie in the design, conduction and statistics. Suggestions are followed.

- Minor Essential Revisions:
  1. Figure 4abc should be in the same chart.

- Major Compulsory Revisions:

  1. Searching strategy. Database: PUBMED only isn’t sufficient to get all publications on this topic. Other database such as EMBASE will be needed. Searching terms: The standardized National Library of Medicine MeSH and free text of the terms are suggested. Smear-negative pulmonary TB should be added in the searching strategy.


  3. Heterogeneity: Heterogeneity existed in data pooling of all analysis in this manuscript. The authors should conduct subgroup analysis or sensitivity analysis to explore the source of heterogeneity. Take meta analysis of “GeneXpert” for example, the country, sample types (Sputum, Sputum Frozen, Sputum Sediment, Sputum-Induced and Various) should be taken into consideration to perform a subgroup analysis. The meta-analysis regression may be helpful to explore the heterogeneity.
4. Publication bias should be analyzed. Egger’s test and Begg’s tests should be performed to access the publication bias of studies. And Deek’s funnel plot is suggested.

5. The elliptical joint confidence region for sensitivity and specificity were constructed, which combine data on sensitivity and specificity to give an indication of a test’s ability to rule in or rule out a condition. In the result, the author should add the 95% confidence interval and prediction region for overall pooled sensitivity and specificity.

6. Within the discussion the authors begin to explore the limitations of the independent studies available for the review. In this section, the author should discuss your confidence in the estimates. We would suggest creating a GRADE table. The GRADE working group has created a method of determining the confidence in the estimates by using risk of bias assessment in addition to the assessment of the meta-analysis precision to rate the quality of the evidence (moderate, high, low), based on study design and other criteria. This method has a strong impact on the reader’s ability to truly understand what they can do and how confident they are with the results you are presenting.

**Level of interest:** An article whose findings are important to those with closely related research interests

**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’ below