Reviewer’s report

Title: The limitations of sputum microscopy for the diagnosis of HIV-associated pulmonary tuberculosis in Tanzania

Version: 1 Date: 19 December 2007

Reviewer: Shriprakash Kalantri

Reviewer’s report:

This study reports the diagnostic accuracy of sputum microscopy for detecting pulmonary tuberculosis among patients infected with human immunodeficiency virus, using TB culture as the reference standard.

1. It is not clear from the manuscript whether there was a blind and independent comparison of the index test (microscopy) with the reference standard (TB culture)? Were the sputum microscopy slides read without knowledge of the culture results?

2. How did the authors handle specimens which were inadequate, contained only saliva, were misplaced or could not be cultured?

3. The fact that sputum specimens pick up only half the culture positive cases of pulmonary tuberculosis is well known. Both the materials and methods section and the results section describe what the authors did and found and therefore, should be described in the past tense.

4. The authors used three sputum specimens for microscopy and report that the third specimen increased the diagnostic accuracy of sputum microscopy by 7%. This is surprising because a recent systematic review (37 studies) 1 shows that the third specimen leads to increase in sensitivity by 3.1% (95% CI, 2.1 to 4.2). In this systematic review the authors argued that a two- specimen approach would have a negligible adverse impact on case finding or would actually improve diagnostic accuracy through improved quality of services and less time to make a diagnosis. Indeed a study from Malawi has reported that 15% patients drop out of diagnostic pathway between submitting specimens and being offered treatment. 2

5. The authors should have given both point estimates of the diagnostic accuracy of microscopy as well as 95% confidence intervals. I have used their data to generate these numbers which they may use in the revised manuscript.

Prevalence of TB: 2.27% (1.98% to 2.59%)

Predictive value of +ve sputum microscopy: 84.52% (77.84% to 89.82%)

Predictive values of -ve sputum microscopy: 99.12% (98.91% to 99.3%)

Sensitivity of sputum microscopy: 61.79% (54.89% to 68.36%)

Specificity of sputum microscopy: 99.74% (99.61% to 99.83%)
LR (positive test) = 235.1 (155.8 to 354.3)
LR (negative test) = 0.38 (0.32 to 0.45)

Interpretation: The data from this study suggest that a positive sputum microscopy increases the probability of TB from 2% to 83% while a negative test reduces the probability from 2% to 1%. The positive likelihood ratio of the sputum microscopy is 235, suggesting that a positive test almost rules in the diagnosis. The negative LR is not as impressive, they reduce the probability of TB nearly by half.

REFERENCES


What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests: I declare that I have no competing interests.