

Tuberculosis Diagnostic Accuracy Of Stool Xpert MTB/RIF and Urine AlereLAM in Vulnerable Children

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Background

Non-sputum-based diagnostic approaches are crucial in children at high risk of disseminated tuberculosis (TB) who cannot expectorate sputum. We evaluated the diagnostic accuracy of stool Xpert MTB/RIF and urine AlereLAM tests in this group of children.

Methods

Hospitalized children with presumptive TB and either age <2 years, HIV-positive or with severe malnutrition were enrolled in a diagnostic cohort. At enrolment, we attempted to collect two urine, two stool and two respiratory samples. Urine and stool were tested with AlereLAM and Xpert MTB/RIF, respectively. Respiratory samples were tested with Xpert MTB/RIF and mycobacterial culture. Both a microbiological and a composite clinical reference standard were used.

Results

The study analyzed 219 children; median age 16.4 months, 72 (32.9%) HIV-positive and 184 (84.4%) severely malnourished. 12 (5.5%) and 58 (28.5%) children had confirmed and unconfirmed TB, respectively. Stool and urine were collected in 219 (100%) and 216 (98.6%) children, respectively. Against the microbiological

reference standard, the sensitivity and specificity of stool Xpert MTB/RIF was 50.0% (6/12, 95% CI 21.1–78.9%) and 99.1% (198/200, 95% 96.4–99.9%), while that of urine AlereLAM was 50.0% (6/12, 95% 21.1–78.9%) and 74.6% (147/197, 95% 67.9–80.5%), respectively. Against the composite reference standard, sensitivity was reduced to 11.4% (8/70) for stool and 26.2% (17/68) for urine, with no major difference by age group (<2 and ≥2 years) or HIV status.

Conclusion

The Xpert MTB/RIF assay has excellent specificity on stool, but sensitivity is suboptimal. Urine AlereLAM is compromised by poor sensitivity and specificity in children.