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XPERT ULTRA IN STOOLS AND URINE FOR THE DIAGNOSIS OF TUBERCULOSIS IN CHILDREN LIVING WITH HIV: MÉDECINS SANS FRONTIÈRES EXPERIENCE IN GUINEA-BISSAU AND SOUTH SUDAN

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Abstract

Background and objectives: Over half of childhood tuberculosis (TB) remains undiagnosed yearly. TB culture is often unavailable. WHO recommends Xpert-Ultra as first test for diagnosis of paediatric TB, but microbiological confirmation remains low and often requires invasive procedures. We aimed to determine the utility of Xpert-Ultra in stools and urine samples to diagnose TB in in children living with HIV (CLWH) in two high-TB burden settings.

Methods: This cross-sectional multicentric study took place at Simão Mendes hospital, Guinea-Bissau, from July 2019 to April 2020, and in Malakal hospitals, South Sudan, from November 2019 to June 2023. Children 6 months to 15 years with suspected TB underwent clinical and laboratory assessment, with one respiratory or extrapulmonary sample (gold standard (GS)), one stool and one urine specimen per patient analysed with Xpert-Ultra.

Results: A total of 93 HIV-positive children were enrolled from Bissau (n=57) and Malakal (n=36), with 49 (53%) females and median (IQR) age of 3.3 (1.5-10) years. Three-quarters of children had severe acute malnutrition (SAM). A total of 72 (77%) children were on ART at baseline and 26/77 (34%) had CD4 count <200cells/mm^3. Confirmation of TB was achieved in 20 (22%); 51 (55%) had unconfirmed TB, and 22 (24%) had unlikely TB. Of 93 children with GS diagnosis, the overall yield of positive TB results was 22% (20/93): 10% (9/90) in pulmonary samples and 20% (1/5) in extrapulmonary samples. A total of 86 and 91 samples were used to evaluate Xpert-Ultra on stools and urine, respectively. Compared to GS, sensitivity and specificity on stools were 87.5% (95%CI:52.9-97.8) and 100% (95%CI: 95.3-100), whereas on urine were 30% (95%CI:10.8-60.3) and 100% (95%CI:95.5-100), respectively. No patients were positive in stools or urine and negative with GS.

Conclusions: Xpert-Ultra in stools showed high sensitivity and specificity in HIV-infected children when compared to gold standard. Sensitivity of urine was low, but more research is needed to determine its clinical indication.

Ethical statement

This study: Has been reviewed and approved by the Institutional Review Board (IRB) or Ethics Review Board (ERB) of my institution and has local ethics approval or permission in the study country, in accordance with local requirements.