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TB diagnosis in HIV+ patients in Mozambique. A field study of combined point of care evaluation with GeneXpert, LAM, and symptom screening

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Background

Tuberculosis (TB) is a major public health concern in many African countries, especially in HIV+ patients, with important economic impact. Systematic screening and early diagnosis are keystones of the WHO End-TB strategy, and effective diagnostic algorithms and prevalence data are urgently needed.

Methods

All HIV+ patients >15 years eligible for antiretroviral therapy (ART) in the NGO DREAM health centres of Maputo, Machava and Beira (Mozambique) between September 2014 and October 2016 were screened for TB before starting ART, with a combined approach: the WHO 4symptom screening (fever, cough, night sweats, weight loss) (4SS), a rapid test for detection of mycobacterial lipoarabinomannan in urine (LAM), and a molecular TB assay on sputum (GeneXpert, repeated if first result was negative). Patients positive to either GeneXpert or LAM were considered TB infected, with TB treatment prescribed. All patients were prescribed ART.

Results

At closure of enrolment, 1004 patients (58.2% women) had WHO symptom screening, together with GeneXpert (n:999), LAM (n:1003), or both (n:998). Population characteristics at entry were the following (interquartile ranges): age 30-43; body mass index 19.4-25.4kg/m2; CD4 count 142-396 cells/mm3 (< 50/mm3: 9.4%), plasma HIVRNA 3.2-5.1 log10copies/ml, haemoglobin 10.3-13.1 g/dl. Most of the patients (66.2%) were clinically asymptomatic (HIV-WHO stage I). Rates of positivity were: 35.0% (352/1004) for 4SS (at least one symptom) and 10.2% (102/1004) for either GeneXpert or LAM, with significant territorial differences. Among 90 GeneXpert-positive patients, 16 had a first negative GeneXpert result. Among 38 LAM positive patients, 26 were GeneXpert-positive, 10 GeneXpert-negative and 2 had no GeneXpert done. Among patients positive for either GeneXpert or LAM, 22 (21.6%) had negative WHO 4SS, corresponding to a prevalence in symptom negative patients of 3.4%. Among GeneXpert-positive patients, LAM-positive patients had significantly lower median CD4 counts than LAM-negative patients (78 vs. 149/mm3, p=0.005). Three of the GeneXpert-positive cases had rifampicin resistance (3.3%).

Conclusions

Based on point-of-care diagnostic tests, we found a 10.2% TB prevalence among HIV-positive patients eligible for ART in Mozambique, with limited occurrence of rifampicin resistance. Data underline the need of combined diagnostic approaches, possibly based on test repetition, in order to reduce the late-stage disease prevalence and its economic effects.

Fig. 1 – TB cases diagnosed: 102

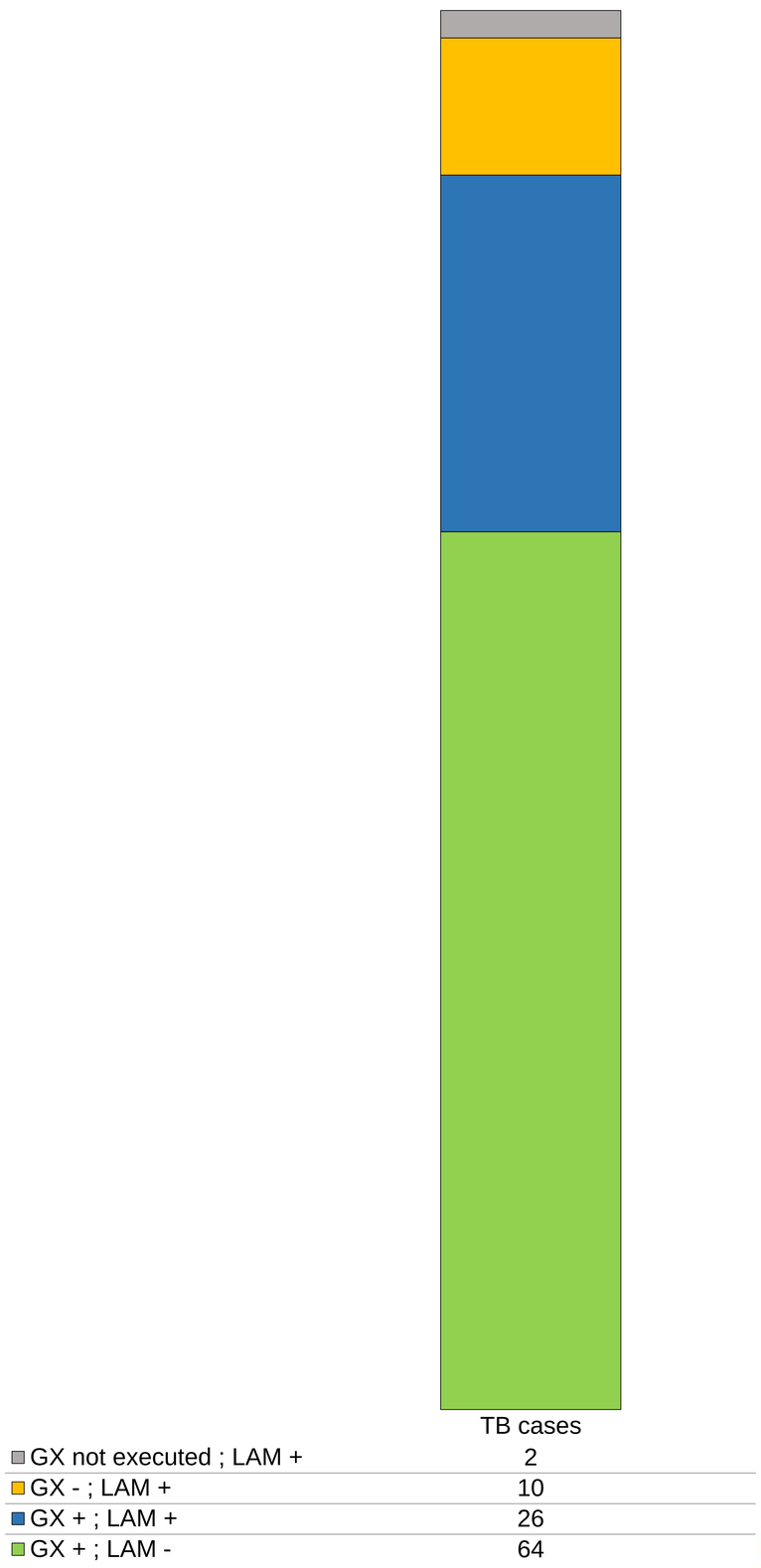

Fig. 2 - TB prevalence and 4 Symptom screening

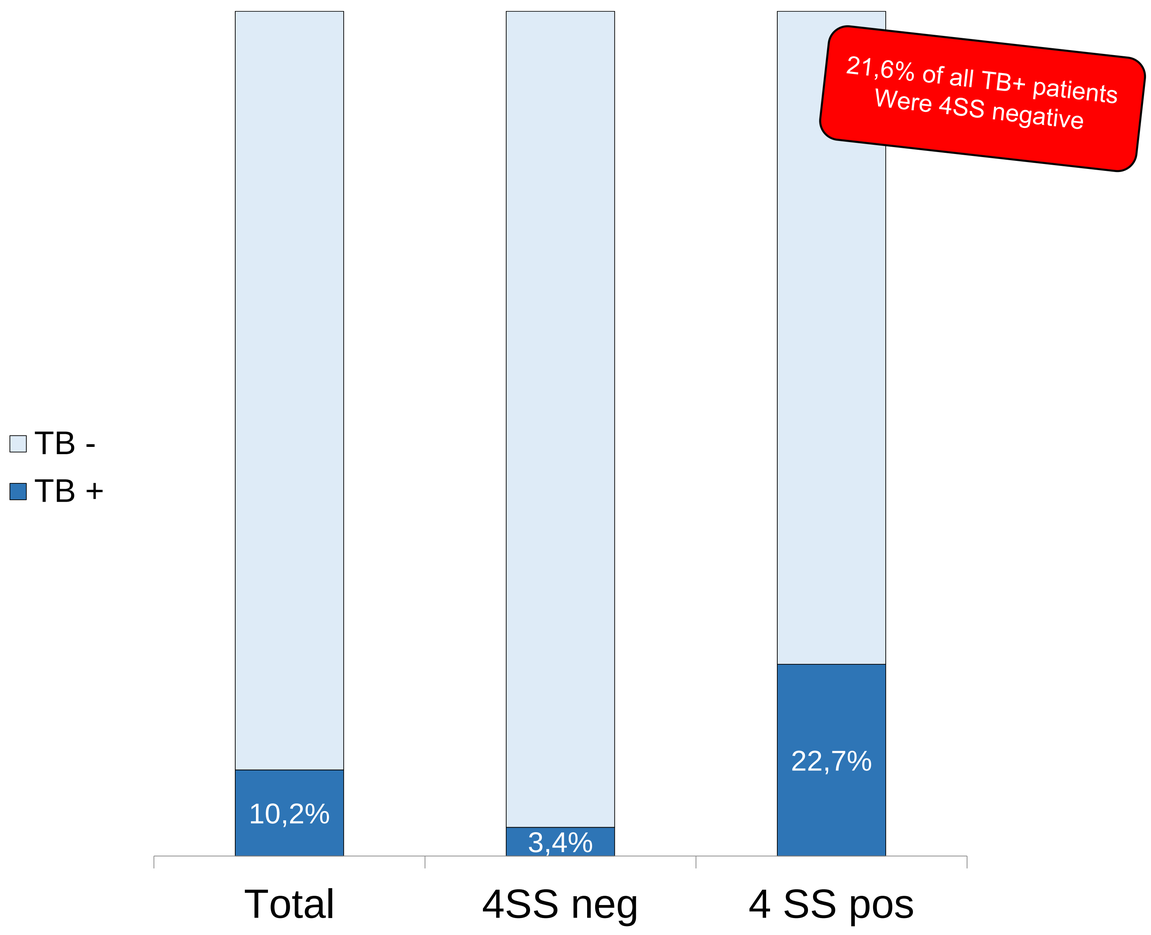

Fig. 3 – Rifampicin resistance