ORIGINAL ARTICLE
TUBERCULOSIS

SHAREABLE PDF

Unmasking the hidden tuberculosis mortality burden in a large *post mortem* study in Maputo Central Hospital, Mozambique

Alberto L. Garcia-Basteiro[1,2,3,13], Juan Carlos Hurtado[2,4,13], Paola Castillo[2,5,13], Fabiola Fernandes[6], Mireia Navarro[4], Lucilia Lovane[6], Isaac Casas[4], Llorenç Quintó[2], Dercio Jordao[6], Mamudo R. Ismail[6], Cesaltina Lorenzoni[6,7], Carla Carrilho[6], Ariadna Sanz[2], Natalia Rakislova[2,5], Aurea Mira[8], Miriam J. Alvarez-Martínez[2,4], Anélsio Cossa[1], Frank Cobelens[3], Inácio Mandomando[1,9], Jordi Vila[2,4], Quique Bassat[1,2,10,11,12,14], Clara Menendez[1,2,12,14], Jaume Ordi[2,5,14] and Miguel J. Martínez[2,4,14]

Affiliations: [1]Centro de Investigação em Saúde de Manhiça (CISM), Maputo, Mozambique. [2]ISGlobal, Hospital Clínic – Universitat de Barcelona, Barcelona, Spain. [3]Amsterdam Institute for Global Health and Development, Amsterdam University Medical Centers, Amsterdam, The Netherlands. [4]Dept of Microbiology, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain. [5]Dept of Pathology, Hospital Clinic, Universitat de Barcelona, Barcelona, Spain. [6]Dept of Pathology, Faculty of Medicine/Eduardo Mondlane University and Maputo Central Hospital, Maputo, Mozambique. [7]Ministry of Health – National Cancer Control Programme, Mozambique. [8]Biomedical Diagnostic Centre (CDB), Hospital Clínic, University of Barcelona, Barcelona, Spain. [9]Instituto Nacional de Saúde (INS), Ministério da Saúde, Maputo, Mozambique. [10]ICREA, Catalan Institution for Research and Advanced Studies, Barcelona, Spain. [11]Pediatric Infectious Diseases Unit, Pediatrics Dept, Hospital Sant Joan de Déu (University of Barcelona), Barcelona, Spain. [12]Consorcio de Investigación Biomédica en Red de Epidemiología y Salud Pública (CIBERESP), Madrid, Spain. [13]Contributed equally to this work and share primary authorship. [14]Contributed equally to this work and share senior authorship.

Correspondence: Miguel J. Martínez, Dept of Microbiology, Hospital Clinic, Universitat de Barcelona, Spain, Barcelona Institute for Global Health, Spain. E-mail: myoldi@clinic.cat

@ERSpublications
This study shows the usefulness of molecular assays in ascertaining TB diagnosis at death. It questions the information of clinical diagnoses obtained from hospital registries as a reliable tool for TB mortality estimation. http://bit.ly/2KrzTBJ

Cite this article as: Garcia-Basteiro AL, Hurtado JC, Castillo P, *et al*. Unmasking the hidden tuberculosis mortality burden in a large *post mortem* study in Maputo Central Hospital, Mozambique. *Eur Respir J* 2019; 54: 1900312 [https://doi.org/10.1183/13993003.00312-2019].

ABSTRACT Sensitive tools are needed to accurately establish the diagnosis of tuberculosis (TB) at death, especially in low-income countries. The objective of this study was to evaluate the burden of TB in a series of patients who died in a tertiary referral hospital in sub-Saharan Africa using an in-house real time PCR (TB-PCR) and the Xpert MTB/RIF Ultra (Xpert Ultra) assay.

Complete diagnostic autopsies were performed in a series of 223 deaths (56.5% being HIV-positive), including 54 children, 57 maternal deaths and 112 other adults occurring at the Maputo Central Hospital, Mozambique. TB-PCR was performed in all lung, cerebrospinal fluid and central nervous system samples in HIV-positive patients. All samples positive for TB-PCR or showing histological findings suggestive of TB were analysed with the Xpert Ultra assay.

TB was identified as the cause of death in 31 patients: three out of 54 (6%) children, five out of 57 (9%) maternal deaths and 23 out of 112 (21%) other adults. The sensitivity of the main clinical diagnosis to detect TB as the cause of death was 19.4% (95% CI 7.5–37.5) and the specificity was 97.4% (94.0–99.1) compared to autopsy findings. Concomitant TB (TB disease in a patient dying of other causes) was found in 31 additional cases. Xpert Ultra helped to identify 15 cases of concomitant TB. In 18 patients, *Mycobacterium tuberculosis* DNA was identified by TB-PCR and Xpert Ultra in the absence of histological TB lesions. Overall, 62 (27.8%) cases had TB disease at death and 80 (35.9%) had TB findings.

The use of highly sensitive, easy to perform molecular tests in complete diagnostic autopsies may contribute to identifying TB cases at death that would have otherwise been missed. Routine use of these tools in certain diagnostic algorithms for hospitalised patients needs to be considered. Clinical diagnosis showed poor sensitivity for the diagnosis of TB at death.