



HAL
open science

Culturing Stools To Detect Mycobacterium tuberculosis

Michel Drancourt

► **To cite this version:**

Michel Drancourt. Culturing Stools To Detect Mycobacterium tuberculosis. Journal of Clinical Microbiology, 2018, 56 (5), 10.1128/JCM.02033-17 . hal-01791584

HAL Id: hal-01791584

<https://hal.science/hal-01791584>

Submitted on 11 Feb 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Culturing Stools To Detect *Mycobacterium tuberculosis*

Michel Drancourt^a

^aMEPHI, Aix Marseille Université, IRD, IHU Méditerranée Infection, Marseille, France

KEYWORD tuberculosis

A recent study by Elisabetta Walters and collaborators evaluated stool culture for the diagnosis of pulmonary tuberculosis in children in South Africa (1). It indicated that among 37 children with bacteriologically confirmed pulmonary tuberculosis, only 6 (16.2%) had *Mycobacterium tuberculosis* in their stools, while 1 child that was classified as having “unconfirmed” tuberculosis also had *M. tuberculosis* in his stools and provided the only positive collected specimen. This disappointing result contrasts with our experience comprising mainly adults with microbiologically confirmed *M. tuberculosis* (2, 3). I noted several protocol discrepancies which may account for the disappointing results. With regard to the specimens used for the diagnosis, Elisabetta Walters and collaborators collected liquid stools directly from diapers from an unspecified number of the 37 children. So far, only formed stools have been evaluated for diagnostic value for pulmonary tuberculosis, not liquid stools recovered from diapers (2, 3). Therefore, it is not possible to use liquid stools collected from diapers for the diagnosis of pulmonary tuberculosis in children; this will require a first-step evaluation. The protocol used by Elisabetta Walters and collaborators diluted, on average, 100-mg stool specimens in a 7-ml Bactec bottle instead of plating this material onto any appropriate solid culture medium (4). This protocol may have diluted the inoculum down to the point where *M. tuberculosis* is just not able to grow at all. Indeed, Elisabetta Walters and collaborators used the century-old decontamination protocol proposed by Petroff in 1915 (5), and 12 of the 37 (32.4%) stool specimens yielded contaminated culture. I demonstrated that the chlorhexidine-based decontamination protocol is superior to other protocols with regard to decontamination of stools (4). However, using chlorhexidine-based decontamination implies the use of a culture medium containing egg lecithin, because chlorhexidine can be used only with solid medium, such as egg-containing medium (Löwenstein-Jensen or Coletsos medium). The one series that my colleagues and I developed specifically contains egg lecithin (6). All together, the 12 contaminated cultures with the 7 positive cultures led to culture positivity for 19 out of the 37 (51.3%) children, including babies; diarrheal stools for which no culture protocol for tuberculosis had ever been evaluated were omitted.

I agree with the authors' conclusion that culturing stools for *M. tuberculosis* requires adequate protocols. I do not agree with the assertion that the very basic sample culture protocols are more expensive than some commercially available molecular tests. I also plead for the replacement of the disputable gastric aspirate testing by the collection of stools, which I believe complement or replace respiratory tract samples for the diagnosis of pulmonary tuberculosis in adults and children (7).

Citation Drancourt M. 2018. Culturing stools to detect *Mycobacterium tuberculosis*. *J Clin Microbiol* 56:e02033-17. <https://doi.org/10.1128/JCM.02033-17>.

Editor Alexander J. McAdam, Boston Children's Hospital

Copyright © 2018 American Society for Microbiology. All Rights Reserved.

Address correspondence to Michel.Drancourt@univ-amu.fr.

For the author reply, see <https://doi.org/10.1128/JCM.00056-18>.

REFERENCES

1. Walters E, Demers AM, van der Zalm MM, Whitelaw A, Palmer M, Bosch C, Draper HR, Gie RP, Hesselning AC. 2017. Stool culture for diagnosis of pulmonary tuberculosis in children. *J Clin Microbiol* 55:3355–3365. <https://doi.org/10.1128/JCM.00801-17>.
2. El Khéchine A, Henry M, Raoult D, Drancourt M. 2009. Detection of *Mycobacterium tuberculosis* complex organisms in the stools of patients with pulmonary tuberculosis. *Microbiology* 155:2384–2389. <https://doi.org/10.1099/mic.0.026484-0>.
3. Yin N, Delord M, Giovanni A, del Grande J, Drancourt M, Brouqui P, Lagier JC. 2015. Laryngeal tuberculosis diagnosed by stool sample cultures: a case report. *J Med Case Rep* 9:74. <https://doi.org/10.1186/s13256-015-0548-1>.
4. Asmar S, Chatellier S, Mirande C, van Belkum A, Canard I, Raoult D, Drancourt M. 2016. A chlorhexidine-agar plate culture medium protocol to complement standard broth culture of *Mycobacterium tuberculosis*. *Front Microbiol* 7:30. <https://doi.org/10.3389/fmicb.2016.00030>.
5. Petroff SA. 1915. A new and rapid method for the isolation and cultivation of tubercle bacilli directly from the sputum and feces. *J Exp Med* 21: 38–42. <https://doi.org/10.1084/jem.21.1.38>.
6. Asmar S, Chatellier S, Mirande C, van Belkum A, Canard I, Raoult D, Drancourt M. 2015. A novel solid medium for culturing *Mycobacterium tuberculosis* isolates from clinical specimens. *J Clin Microbiol* 53:2566–2569. <https://doi.org/10.1128/JCM.01149-15>.
7. Drancourt M. 2017. Please, no more gastric aspirate to diagnose pulmonary tuberculosis in children. *Clin Infect Dis* 65:2158. <https://doi.org/10.1093/cid/cix712>.