

## Infeção por *Mycobacterium tuberculosis* Subsp. *canettii* *Mycobacterium tuberculosis* Subsp. *canettii* Infection

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To the editor:

As we know, the *Mycobacterium tuberculosis* complex (MTC) includes different slow growing mycobacteria: *M. tuberculosis*, *M. canettii*, *M. africanum*, *M. bovis*, *M. bovis BCG*, *M. caprae*, *M. microti* and *M. pinnipedii*.<sup>1</sup> *M. canettii*, a rarely identified one, was first isolated in a 20-year-old French farmer suffering from pulmonary tuberculosis by George Canettii in 1969 and added to the group in 1997.<sup>2</sup> It is considered smooth tubercle bacilli, a group that includes members of the MTC characterized by smooth and cordless organisms,<sup>3</sup> probably due to particular membrane characteristics that allow their growth in adverse conditions,<sup>4</sup> like experimental infected soil for 12 months.<sup>3</sup> Clinical and radiological manifestations are indistinguishable from tuberculosis caused by other members of MTC,<sup>1</sup> but its genetic might be unique. It is characterized by trimethoprim-sulphametoxazole susceptibility, growth on trypticase-soy media and a shorter generation time in liquid medium<sup>4</sup> and recent data also showed it is intrinsic resistant to pyrazinamide.<sup>4</sup> Lack of inter-human transmission,<sup>3</sup> geographic restriction and the genetic diversity of *M. canettii* suggest a yet unknown non-human reservoir.<sup>4</sup> Some authors consider the possibility of contamination of drinking water and food, with replication in oropharynx and cervical lymph nodes and dissemination in the respiratory and digestive tracts.<sup>3</sup> Besides genetic studies have been suggested *M. canettii* is one of the most ancient phylogenetic lineages of the tubercle bacilli, we do not have certainties about its natural reservoir, host range and mode of transmission, be-

cause many laboratories use tests that identify only the MTC level.<sup>1</sup> Because of this, *M. canettii* infection prevalence must be underestimated.

In Microbiologic laboratory of Centro Hospitalar do Porto, it is standard to develop molecular biology tests when resistance to pyrazinamide is detected. The goal is to determine if it's a *M. bovis* or other mycobacteria. In this way, from a total of 9 cases of pyrazinamide resistance, five cases of *M. canettii* infection were detected in that hospital for the past five years. The five patients were from nearby rural areas in the north of Portugal and two of them were farmers and at least one had diary contact with cattle and goats. One of them usually ingested food and water directly from the soil. All of them present with respiratory symptoms and one progressed to disseminated tuberculosis. (See table 1).

We found some epidemiologic characteristics that may have some importance, namely the rural residence, the contact with goats and cattle and the food and water ingestion directly from the soil.

In conclusions, despite its rarity, smooth tubercle bacilli deserve more investigation because of their unique epidemiologic, clinical and microbiological characteristics. Many laboratories use tests that identify only the MTC level, that's why *M. canettii* prevalence is probably underestimated. Routine identification of this mycobacteria is necessary to determine its natural reservoir, host range and mode of transmission and then better understand its clinical importance. ■

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**Table 1:** Patients characteristics.

Age	55	38	83	31	29
Gender	Male	Male	Male	Male	Male
Residence	Rural	Rural	Rural	Rural	Rural
Occupation	Security	Farmer and Breeder of cattle and goats	Gardener	Administrative	Farmer
Food and/or water ingestion directly from the soil	No	-	No	Yes	-
Pets	Cat	-	No	Dogs and Cats	-
Recent travels	No	-	France, Germany and Spain in the past two years	France, Germany, Netherlands and England in the past few years	-
Risk factors/ Comorbidities	Alcohol and tobacco consumption	-	Chronic pulmonary obstructive disease	VIH infection Recent contact with a patient with tuberculosis	-
Diagnosis	10/2012	3/2015	5/2015	8/2015	5/2016
New case/ retreatment	Retreatment	New case	New case	New case	New case
Clinical presentation	Pulmonary	Pulmonary	Disseminated	Pulmonary	Pleural
Local of identification of <i>M. canetti</i>	Bronchial aspirate	Respiratory secretions	Blood	Respiratory secretions	Pleural effusion
Antimicrobial susceptibility test	Resistance to pyrazinamide	Resistance to pyrazinamide	Resistance to pyrazinamide	Resistance to pyrazinamide	Resistance to pyrazinamide

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**REFERÊNCIAS**

- Somoskovi A., Dormandy J., Mayrer A. R., Carter M., Hooper N., and Salfinger M. . "Mycobacterium canettii" isolated from a human immunodeficiency virus-positive patient: first case recognized in the United States. *J Clin Microbiol.* 2009 ;47:255-7. doi: 10.1128/JCM.01268-08
- Goh KS, Legrand E, Sola C, Rastogi N. Rapid differentiation of "Mycobacterium canettii" from other Mycobacterium tuberculosis complex organisms by PCR-restriction analysis of the hsp65 gene. *J Clin Microbiol.* 2001;39:3705-8.
- Aboubaker Osman D, Bouzid F, Canaan S, Drancourt M. Smooth Tubercle Bacilli: Neglected Opportunistic Tropical Pathogens. *Front Public Health.* 2016;3:283. doi: 10.3389/fpubh.2015.00283
- Koeck JL, Fabre M, Simon F, Daffé M, Garnotel E, Matan AB, et al. Clinical characteristics of the smooth tubercle bacilli 'Mycobacterium canettii' infection suggest the existence of an environmental reservoir. *Clin Microbiol Infect.* 2011;17:1013-9. doi: 10.1111/j.1469-0691.2010.03347.x.