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BACTEC MGIT 960 system and classic Lowenstein-Jensen culture in the diagnosis and drug susceptibility of *Mycobacterium tuberculosis* from pulmonary specimens, at the Pasteur Institute of Algeria

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Tuberculosis is an old infectious disease and the causative agent is *Mycobacterium tuberculosis* complex. The direct diagnosis stills long and fastidious since bacilloscopy, even if is fast, lacks sensitivity. The culture on Lowenstein-Jensen (L-J), which remains the reference method with a good sensitivity, sometimes takes up to ten weeks to obtain the result. In order to compensate the slow growth of cultures on solid media, new automated methods have been developed, including BACTEC MGIT 960, Versa TREK, MBRedox, BACTEC 460, which allow early diagnosis and more suitable for antibiotic therapy, in addition to their good sensitivity and specificity. The aim of this study is to verify the contribution of BACTEC MGIT 960 in the diagnosis of pulmonary tuberculosis, compared to basciloscopy and classic culture on L-J medium, at the Tuberculosis and Mycobacteria unit in Pasteur Institute of Algeria. Nine hundred and fourteen (914) specimens were collected between January 2016 and April 2017. One hundred and seventy nine (179) cases were reported positive by L-J classical culture and/or BACTEC MGIT 960. Among the 179 cases, 155 were detected by the BACTEC MGIT 960 system, and confirmed by Ziehl control, L-J subculture and MPT64 immuno-chromatographic assay. On classic L-J culture and bacilloscopy, nevertheless, only 123 and 95 specimens respectively were positive. These results confirm the height susceptibility of BACTEC MGIT 960 in improving the diagnosis of tuberculosis in bacilli-poor specimens, compared to classic culture ($p=0.037$) and direct examination ($p=0.014$). Furthermore, the contamination rate was higher in L-J culture: 81/914 (8.86%), including 7 bacilloscopy positive specimens, whereas, with BACTEC MGIT 960, only 29/914 (3.17%) specimens were contaminated, with no positive bacilloscopy cases. This result was statistically confirmed ($p<0.0001$). However, on the 95 bacilloscopy positive specimens, 6 did not give positive cultures neither on BACTEC MGIT 960 nor on L-J. The main advantage of BACTEC MGIT 960 is its ability to shorten the time of mycobacterial growth to an average of 7 days, compared to the solid medium. Nevertheless, the bacilloscopy and culture on L-J remains complementary to this automat, for a reliable diagnosis. Despite the good laboratory practices, there is an incompressible risk of contamination.

Biography

Ferhat Djoudi has completed his PhD on Epidemiology and molecular characterization of MRSA in 2015 at Abderrahmane Mira University of Bejaia, Algeria. And he started Postdoctoral studies at the same university, on MDR and XDR tuberculosis in Algeria. He is the Head of Microbiology Department and Teacher-Researcher at the same university. He has published many papers in reputed journals.

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