

Session: EP190 Direct detection methods

Category: 4b. Diagnostic bacteriology – non-culture based, including molecular and MALDI-TOF

25 April 2017, 12:48 - 12:53
EP0937

Performance of GenoType NTM-DR kit for identification of *Mycobacterium abscessus* subspecies and detection of antibiotic resistance

Nicolas Bouzinbi*¹, Thibault Bertolotti², Salim Aberkane³, Anaïs Suzanne Christiane Appelgren⁴, Michael Ponsoda⁵, Gilles Panteix⁵, Veronique Jacomo⁵, Anne-Laure Banuls⁶, Olivier Marcy⁷, Sylvain Godreuil⁸

¹*Chu Arnaud de Villeneuve; Microbiologie-Virologie*

²*Chu Arnaud de Villeneuve*

³*Chu Arnaud de Villeneuve; Hôpital Arnaud de Villeneuve; Microbiologie-Virologie*

⁴*University Hospital of Montpellier; Bacteriology-Virology*

⁵*Biomnis*

⁶*Institut de Recherche et Développement*

⁷*Inserm*

⁸*Centre Hospitalier Régional Universitaire (Chru) de Montpellier; Hôpital Arnaud de Villeneuve; Département de Bactériologie-Virologie*

Background: *M. abscessus* complex is thought to comprise three subspecies, based on whole genome sequencing: *M. abscessus* subsp. *abscessus*, *M. abscessus* subsp. *massiliense* and *M. abscessus* subsp. *bolletii*. Because subspecies in *M. abscessus* complex differ in antibiotic resistance and treatment response, a rapid molecular diagnosis is essential, and now recommended from cystic fibrosis (CF) patients, for subspecies identification and for guiding adequate antimicrobial therapy. The recently commercialized GenoType NTM-DR tests (Hain, Lifescience, Nehren, Germany) is a new line probe assay that allows rapid simultaneous detection and differentiation of *M. abscessus* subspecies and detection of the resistance to macrolides and aminoglycosides from mycobacterial isolates. The aim of this study was to determine the performance of the GenoType NTM-DR assay for subspecies identification in *M. abscessus* complex isolates. The secondary

objective was to compare the molecular resistance results of *M. abscessus complex* isolates from NTM-DR assay with results of phenotypic antibiotic susceptibility testing of clarithromycin and amikacin.

Material/methods: One hundred seventy six *M. abscessus complex* isolates from respiratory sample of CF and non-CF patients were obtained from a collection of the Microbiology Laboratory, University Hospital, Montpellier (France) between January 2008 and December 2015. *M. abscessus* complex species identification was based on Geno-Type Mycobacterium CM test (Hain Lifescience Nehren, Germany) and the MLST method, based on seven housekeeping genes (*argH*, *cya*, *glpK*, *gnd*, *murC*, *pta* and *purH*). GenoType NTM-DR testing. The NTM-DR kit (Hain Lifescience, Nehren, Germany) was performed according to the manufacturer's recommendations. MICs of clarithromycin and amikacin were obtained by the reference microdilution method using Sensititre RAPMYCO microplates (Trek Diagnosis Systems). With an expected sensitivity of the NTM-DR assay of 97%, 86 (86/176) *M. abscessus* complex isolates were randomly selected (45 *M. abscessus* (45/98), 35 *M. massiliense* (35/68) and 6 *M. bollettii* (6/10) were needed to assess the sensitivity with a precision of +/-5%. The GenoType NTM-DR assay result was interpreted by two independent readers blinded to each other's result.

Results: Among the 86 *M. abscessus* complex studied, the concordance between the results of NTM-DR test and MLST method concerning subspecies-identification was 98.8% (85/86). One isolate, identified as *M. abscessus* subsp. *massiliense* by MLST technique, was identified as *M. abscessus* subsp. *massiliense*. The sensitivity and specificity of subspecies-identification were 100% and 98.8% overall, respectively. The concordance between the test and phenotypic antibiotic susceptibility testing results was 100% (86/86) for clarithromycin and 98.8% (85/86) for amikacin.

Conclusions: Our results indicate that the GenoType NTM-DR assay could provide a potential alternative to the reference MLST method and DST, when simultaneous determination of *M. abscessus* subspecies and resistance to clarithromycin and aminoglycosides in clinical *M. abscessus* isolates is required.