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Title: Modern molecular direct tests for rapid identification and drug susceptibility testing of Mycobacterium tuberculosis

Ms. Ksenia 8967 Galkina crazymare@mail.ru ¹, Mrs. Elena 8968 Nosova rna68@rambler.ru MD ¹ and Ms. Maria 8969 Krasnova dna77@mail.ru MD ¹. ¹ Department of Health, Moscow Scientific and Clinical Antituberculosis Center, Moscow, Russian Federation, 107014 .

Body: Molecular tests are widely used for detection of M. tuberculosis (MTB) in clinical samples in laboratories around the world. At present, there are molecular tests allowing to perform MTB detection and DST to antituberculosis drugs simultaneously. We performed a comparative analysis of three molecular tests: GeneXpert MTB/RIF (Cepheid, USA), GenoType MTBDRplus (Hain Lifescience, Germany) and TB-Biochip MDR (LLC "BIOCHIP", Russia). All in all 151 sputum samples were investigated. 32 of them were smear- and culture-positive, and 19 of them were smear-negative but culture-positive. Coincidence of the results of MTB detection by molecular tests with the culture test in Bactec 960 (Becton Dickinson, USA) were 92,2%, 78,4% and 49,02% for GeneXpert MTB/RIF, TB-Biochip MDR and MTBDRplus respectively. For the smear- and growth-positive sputum samples results coincided in 100%, 96,7%, and 83,3% of cases for GeneXpert MTB/RIF, TB-Biochip MDR and MTBDRplus respectively. For the smear-negative and growth-positive sputum samples results coincided in 80,9% and 52,4% of cases for GeneXpert MTB/RIF and TB-Biochip MDR respectively. Results of molecular and bacteriologic DST to rifampicin (RIF) (isoniazid (IHN)) coincided in 100%, 97,4% and 100% of cases for GeneXpert MTB/RIF, «TB-Biochip MDR» and MTBDRplus respectively. Our data show, that GeneXpert MTB/RIF is the fastest real-time test with the highest sensitivity, but we can get the information about MTB sensitivity only to RIF. As to TB-Biochip MDR and MTBDRplus tests, they are also simple, reliable and allow performing DST to RIF and IHN, but the sensitivity of MTBDRplus is not enough to analyze smear-negative samples.