

Publication

Analysis of drug resistance among difficult-to-treat tuberculosis patients in Ghana identifies several pre-XDR TB cases

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BACKGROUND: Resistance to tuberculosis (TB) drugs has become a major threat to global control efforts. Early case detection and drug susceptibility profiling of the infecting bacteria are essential for appropriate case management. The objective of this study was to determine the drug susceptibility profiles of difficult-to-treat (DTT) TB patients in Ghana. METHODS: Sputum samples obtained from DTT-TB cases from health facilities across Ghana were processed for rapid diagnosis and detection of drug resistance using the Genotype MTBDRplus and Genotype MTBDRsl.v2 from Hain Life science. RESULTS: A total of 298 (90%) out of 331 sputum samples processed gave interpretable bands out of which 175 (58.7%) were resistant to at least one drug (ANY(r)); 16.8% (50/298) were isoniazid-mono-resistant (INH(r)), 16.8% (50/298) were rifampicin-mono-resistant (RIF(r)), and 25.2% (75/298) were MDR. 24 (13.7%) of the ANY(r) were additionally resistant to at least one second line drug: 7.4% (2 RIF(r), 1 INH(r), and 10 MDR samples) resistant to only FQs and 2.3% (2 RIF(r), 1 INH(r), and 1 MDR samples) resistant to AMG drugs kanamycin (KAN), amikacin (AMK), capreomycin (CAP), and viomycin (VIO). Additionally, there were 4.0% (5 RIF(r) and 2 MDR samples) resistant to both FQs and AMGs. 81 (65.6%) out of 125 INH-resistant samples including INH(r) and MDR had katG-mutations (MT) whereas 15 (12%) had inhApro-MT. The remaining 28 (22.4%) had both katG and inhA MT. All the 19 FQ-resistant samples were gyrA mutants whereas the 10 AMGs were rrs (3), eis (3) as well as rrs, and eis co-mutants (4). Except for the seven pre-XDR samples, no sample had eis MT. CONCLUSION: The detection of several pre-XDR TB cases in Ghana calls for intensified drug resistance surveillance and monitoring of TB patients to, respectively, ensure early diagnosis and treatment compliance.

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