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The possible occurrence of extensively drug-resistant tuberculosis within multidrug-resistant *Mycobacterium tuberculosis* isolates from Morocco: Retrospective study

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Background: The emergence of extensively drug-resistant tuberculosis (XDR-TB) has raised public health concern for global control of TB. Although molecular characterization of drug resistance-associated mutations in multidrug-resistant isolates in Morocco has been made, mutations in XDR isolates and their genotypes have not been reported previously. Resistance to second line antituberculosis drugs (SLDs) is mainly due to mutations in specific genes: *gyrA* and *gyrB* for resistance to fluoroquinolones (FQs), *rrs*, *eis* and *tlyA* for resistance to injectable drugs (kanamycin (KAN), amikacin (AMK), and capreomycin (CAP)).

Methods: A laboratory collection of 90 MTB isolates already characterized as MDR and 60 susceptible isolates randomly selected were enrolled in this retrospective study. The mutation profiles associated with resistance to SLDs: FQs and injectable drugs were assessed by DNA sequencing. Target sequences for four genes were examined: *gyrA* and *gyrB* (FQs), and *rrs* (KAN, AMK, and CAP) and *tlyA* (CAP). All samples had their fingerprint already established by spoligotyping.

Results: Molecular analysis showed that 26.7% of MDR isolates are pre-XDR strains and harbored mutations in *gyrA* gene. The most prevalent mutations involved in FQ resistance was Asp94Gly (50%). None of the isolates harbored mutations neither in *gyrB* nor in *rrs* genes. The sensitivity for the detection of FQs resistance by DNA sequencing could not be evaluated because of the lack of the information regarding DST for SLDs. All pre-XDR strains belong to LAM Lineage (LAM4 and LAM9) raising the possible emergence of a specific clone.

Conclusion: The results of this preliminary study highlight the need for rapid detection of mutations associated with resistance to SLDs in order to adjust timely the treatment and to interrupt the propagation of virtually untreatable form of the disease.

Biography

Imane Chaoui has completed his PhD in Microbiology and Molecular Biology from Mohammed V University. She is a researcher in the Centre National de l'Energie Des Sciences Et Des Techniques Nucleaires, Morocco. Her work is deeply related to tuberculosis research on: Diagnostics, drug resistance, molecular epidemiology, investigations on the global TB transmission in Morocco and geo-localization of emerging and preexisting clones. She has published 9 papers in reputed journals and has been serving as a reviewer in many international journals.

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