



Detection of a novel mutation G511T in the 530 loop in 16S rRNA in multi drugs resistant Mycobacterium tuberculosis isolated from Sudanese patients

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Abstract:

Background:

Tuberculosis (TB) is a bacterial disease considered as a global public health emergency by the World Health Organization (WHO) since 1993. In Sudan, MDR-TB represents a growing threat and one of the most important challenges that faced national tuberculosis program to establish a comprehensive multidrug-resistant tuberculosis management system.

Objective:

To characterize the diversity and frequency of mutations in Sudanese MDR-TB strains isolated from Wad Madani, Al-Gadarif and Khartoum using 16S rRNA and phylogeny approach.

Material and Methods:

A descriptive cross-sectional study was carry on total of 60 MDR-TB isolates from Wad-Madani, Al-Gadarif and Khartoum were tested with molecular LPA (Genotype MTBDR plus) and GeneXpert MTB/RIF assay and Spoligotyping to confirm their resistance to RIF and INH. Sequencing and phylogenetic analysis was carried out using in silico tools.

Result:

This study revealed the circulation of different Sudanese MDR-TB strains isolated from Wad Madani and Al-Gadarif belonging to two distinct common ancestors. Two isolates from Wad Madani (isolate3 and isolate11) found in one main group which characterized by a novel mutation G511T in the 530 loop.

Conclusion:

The recurrence of C217A mutation in Al-Gadarif (isolate11) indicates the spread of this mutation in Sudanese MDR-TB strains and the diversity of this inheritance



leading to generate new G511T novel mutation. So, understanding the molecular characterization of resistance mechanisms in MD-TB can facilitate the early detection of resistance, the choice of appropriate treatment and ultimately the management of MD-TB transmission. Bioinformatics approaches provide helpful tools for analyzing molecular mechanisms of resistance in pathogens.

Biography:

Yousif Mohammed Alfatih has completed his Bsc from University of science and Technology, Khartoum-Sudan, and Msc at the age of 25 years from, Sudan international University, Khartoum-Sudan.

Recent Publications:

1. Computed Verification of Light and Radiation Field Size Superimposition On Cobalt-60 machine, Verification of Fields Size using Image Processing Technique
2. Quality Control of Technetium-99 Generator, Theory and Practice
3. Application of Analysis Approach in Noise Estimation, Using Image Processing Program
4. A Short Guide To Radiation Mold Technology, A manual for daily use

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