Reproducibility of four identification methods of antibiotic-resistant *Mycobacterium tuberculosis* isolated from displaced and nondisplaced Iraqi patients with reference to QuantiFERON

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Background: The first and major step in the diagnosis of TB is its accurate and early detection. To fulfill this objective, many methods have been developed and reported that obtain early growth of *M. tuberculosis*. For exactly detection of the TB cases, recently a novel polymerase chain reaction (PCR) based diagnostic kit has been developed. It is based on the nucleic acid amplification (NAA) of specific region of *Mycobacterium* DNA. QuantiFERON-TB test, (QFT) an *in vitro* diagnostic test that measures a constituent of cell-mediated immune reactivity to M. tuberculosis was approved by Food and Drug Administration (FDA) as an aid for identifying *Mycobacterium tuberculosis* infection.

Methodology: In the current study, there were 50 patients (18 displaced and 32 nondisplaced TB patients) and 40 healthy controls. The patient was examined for the presence of TB utilizing QuantiFERON-TB Gold In-Tube assay, polymerase chain reaction(PCR), AFB smear and TB culture. Drug susceptibility of isolates to first-line anti-tuberculosis drugs was performed using the proportion method on Lowenstein Jensen medium (L J medium) within 2-4 weeks.

Results: It was found that the frequency of positivity of acid-fast stain, culture and QuantiFERON for displaced and non-displaced patients was 36, 33.3 and 100 and 64, 66.7 and 100% respectively. The positivity towards polymerase chain reaction for primers IS6110 and MPB64 for displaced patients was 37.5 and 100% respectively, whereas for nondisplaced patients was 14.3 and 100 % respectively too. The present study revealed that 20 isolates out of 34 tested were resistant to one or more of anti-tuberculosis drugs tested which were isoniazid, streptomycin, rifampicin and ethambutol. Statistically, there was a significant difference between types of drug and frequency of resistance among displaced and nondisplaced Iraqi patients ($P<0.05$).

Conclusions: The PCR test for the presence of primer MPB64 and QuantiFERON test were 100% positive for all mycobacterial isolates tested from displaced and nondisplaced patients, whereas other identification tests revealed variations in reproducibility. The present study showed that all the mycobacterial isolates tested for antimycobacterial drugs were resistant to at least one antibiotic used and most of them were multiple-resistant. Statistically, there was a significant difference between types of drug and frequencies of resistance ($P<0.05$).

Speaker Biography

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