Study to determine presence of resistance to second-line anti-tuberculosis drugs in Kenyan isolates.

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ABSTRACT

Tuberculosis (TB) is yet far from being controlled. Despite the fact that several reasons could be attributed to this, a significant contributing factor is the development of resistance to the currently available drugs due to the successful adaptation of the pathogen to these drugs. Second-line anti-TB drugs are being used for treatment of Multi-Drug Resistant TB (MDR-TB) patients. The purpose of this study was to investigate the presence of drug resistant strains of *Mycobacterium tuberculosis* (MTB) to second-line anti-TB drugs (SLDs) in first-line predetermined drug susceptibility isolates obtained from different studies carried out at the Centre for Respiratory Diseases Research (CRDR) between 2002 and 2007.

A total of 216 MTB isolates including 78 first-line drug resistant isolates to individual and combined drugs and 138 first-line drugs susceptible isolates to all drugs were selected for this study. Of the 78 first-line resistant isolates, 25 isolates were MDR-TB strains. Resistant ratio and proportion methods were used to test. All the isolates were tested for susceptibility to four second-line drugs including cycloserine, gatifloxacin, ethionamide and kanamycin. Using S.P.S.S. computer data analysis programme, analysis of data was done using chi-square to compare resistance and susceptibility among the drugs, and to compare resistance and susceptibility between the first-line susceptible and resistant isolates to second-line anti-TB drugs.

Of the 216 first-line isolates tested, 96.3% were sensitive, 2.2% were fully resistant and 1.5% had intermediate resistance. Of the 78 isolates tested, 94.9% were sensitive, 4.2% were fully resistant and 1% were intermediate resistant. Of the 138 isolates tested, 97.1% were sensitive, 1.1% were fully resistant and 1.8% were intermediate resistant. Drug resistance to second-line

anti-TB drugs was not statistically associated with previous first-line anti-TB drugs resistance, although the resistance level of second-line anti-TB drugs in the first-line resistant isolates was higher than in the first-line sensitive isolates.

Resistance of MTB to second-line anti-TB drugs is present in Kenya. There was resistance to all the four second-line anti-TB drugs tested in this study, in both first-line resistant and sensitive isolates. There was no XDR-TB strain isolated.

As resistant MTB increases in Kenya further studies are needed to evaluate second-line DST techniques and establish an appropriate one within the national policies. Since the samples used in this study may not be a representation of the current national status of drug resistance to second-line anti-TB drugs, a national surveillance is important to establish the prevalence of second-line anti-TB drugs resistance in the country.