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Multidrug resistant tuberculosis: Prevalence and risk factors in districts of Metemma and West Armachiho, Northwest Ethiopia

Feleke Mekonnen Demeke
University of Gondar, Ethiopia

Background: Multidrug resistant tuberculosis (MDR TB) is an emerging challenge for TB control programs globally. According to the National DRS result in 2005, 1.6% of new cases and 11.8% of previously treated cases were MDRTB. According to WHO report on the prevalence of MDR-TB in 2012, Ethiopia stands in the position 15th out of the 27 high priority countries in the world and 3rd in Africa following South Africa and Nigeria.

Objectives: The aim of this study was to assess the prevalence of MDR-TB and associated risk factors in West Armachiho and Metemma districts of North Gondar.

Methods: A cross-sectional study was conducted in West Armachiho and Metemma districts between February and June 2014. All smear positive pulmonary tuberculosis patients were included in the study. Socio-demographic and risk factor data were collected using a semi-structured questionnaire. Informed consent was obtained from study subjects and two morning sputum samples were collected prior to starting anti-TB treatment for culture and drug susceptibility testing. Culture was performed on Lowenstein Jenson Medium (LJ). Drug susceptibility testing was first performed for rifampicin using GeneXpert MTB/RIF. For those rifampicin resistant strains, DST was performed for both isoniazid and rifampicin to identify MDR-TB using proportional method on LJ media. Finally, data was entered, cleared and analyzed using statistical Package SPSS version 20. Tables and graphs were used to describe the findings. Logistic regression was used to assess the association. P-value and 95% confidence interval were also used to assess the statistical significance.

Results: Of 124 smear-positive pulmonary TB patients, 117 (94.4%) were susceptible to Rifampicin, while 7(5.7%) were confirmed to be resistant to Rifampicin and Isoniazid. The overall prevalence of MDR-TB was 5.7% (2.3% among new cases and 13.9% among previously treated cases). History of previous treatment (OR=7, P=0.025) was significantly associated risk factor for MDR-TB.

Conclusion & Recommendations: The overall prevalence of MDR-TB among new and previously treated cases (5.7%) was considerably high. History of previous treatment was risk factor for MDR-TB. Therefore, efforts to reduce the burden of MDR-TB such as early case detection and treatment of MDR-TB, strengthening TB infection control activities and proper implementation of DOTS should be made in the study area.

atnatio@gmail.com

New genotypes of aflatoxin-producing fungi from Egypt and Philippines

Hassan Amra¹, Taha Hussien^{1,4}, Yousef Y Sultan¹, Naresh Magan², Ana Liza Carlobos-Lopez³, Christian Joseph R Cumagun³ and Tapani Yli-Mattila⁴

¹National Research Centre, Egypt

²Cranfield University, UK

³University of the Philippines Los Baños, Philippines

⁴University of Turku, Finland

Aflatoxins (AFs), mainly produced by *Aspergillus flavus* and *A parasiticus*, are the major contaminants of crops in areas with hot climates. These compounds are carcinogenic and act as a cancer initiator. 160 single spore isolates of *A flavus/parasiticus* were obtained from Egypt and the Philippines. 26.5% of the isolates produced AFs. Producers of four chemotypes of aflatoxin were found. Surprisingly, all positive isolates of *A parasiticus* produced higher amounts (2400-40400 ng ml⁻¹) of total AFs (AFB1, AFB2, AFG1 and AFG2) than the positive isolates of *A flavus* (<1200 ng ml⁻¹). All isolates, which were able to produce AFs, gave a positive signal with the ver-1/ver-2 and ordAF/ordAR primers, which amplify ver-1 and ordA genes in the aflatoxin biosynthetic pathway. Based on PCR products of ver-1 gene, new genotypes of aflatoxigenic fungi were found, which revealed the variability of AFs production between different isolates depending on the sources of isolation.

tymat@utu.fi