THE RISE OF DRUG-RESISTANT TUBERCULOSIS IN SOUTHERN AFRICA: ARE WE LEARNING FROM HISTORY OR REPEATING IT?

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ABSTRACT

Background and Objective
Tuberculosis epidemic has reached astronomic and emergency proportions, particularly in Southern Africa, despite efforts by key stakeholders in implementing necessary control strategies. The diagnosis of TB is still based on smear microscopy in many parts of Africa while the emergence of drug-resistant TB is increasing. We are reporting on the outcomes of samples received in a TB reference laboratory in Swaziland and results from an assessment of non-clinical staff’s knowledge, attitudes and beliefs towards TB and IPC related issues in public health facilities in South Africa.

Methods
A self-administered close-ended questionnaire was used to collect cross-sectional data among non-clinical staff in 5 public hospitals in KwaZulu-Natal between April 2011 and November 2011. In a TB reference laboratory in Swaziland, using MGIT automated instrument, sputum samples were screened for TB from June 2011 to December 2011. Positive cultures were confirmed as MTB complex using ZN smears and TB Ag MPT64 and then, the drug susceptibility testing was done on RIF, INH, Streptomycin and Ethambutol using the 1% proportion method.

Results
Of the 79 non-clinical staff, 67.4% were of the opinion that a surgical face mask protects the wearer from contracting TB while 44.3% did not understand rational behind triage and fast-tracking of patients in TB control program. Of great concern, 25% of non-clinical respondents perceived no risk of contracting TB in hospital environment and believed that TB was caused by drinking and smoking. Whilst 10% of these respondents desperately felt that there is no means of protection against TB; they also expressed that there is no need to implement a screening program for staff.

Samples were obtained from 6163 patients of which 22.3% were culture positive and of these culture positives, 90% were MTB complex and 10% were NTM. Among patients diagnosed with TB, 52% were smear positive and 48% were smear negative. Sixty-six percent of these cases were MDR follow up cases with 3.4% relapse cases, and 4.5% failure to convert.
Conclusion
While knowledge of staff about TB Infection Control is still very low, DR-TB cases are increasing. The study underlines the need to prevent DR-TB by bridging knowledge gaps among HCWs and necessity to improve laboratory capacity to support TB control efforts.

Keywords: DR-Tuberculosis, Infection Prevention and Control, Strengthening laboratory Capacity, Southern Africa.

INTRODUCTION

TB has become epidemic in the setting of a generalized HIV epidemic in southern Africa, and HIV infection has had a strong influence on the increased numbers of drug-resistant TB cases in the region. (WHO 2008) Drug-resistant TB imposes a tremendous health burden throughout southern Africa. Thus, it has become imperative to understand the dynamics of the TB epidemic in Southern Africa to be able to prevent the potential existence for the explosive spread of Drug-resistant TB.

One in four young adults in South Africa is infected with HIV and of these, up to two thirds may also be infected with TB. Conversely, between 60% and 80% of new TB cases in South Africa also have HIV infection yet HIV fuels TB infection due to weakened immune system [1].

Drug-resistant TB in the context of southern Africa’s HIV epidemic raises many important clinical issues, including the lack of diagnostic capacity to detect TB and perform drug susceptibility testing, with many patients dying before the extent of their drug resistance can be assessed; lack of measure infection control; TB infections that test negative on sputum smears and extra-pulmonary TB; availability of treatments, including second-line drugs; drug toxicity; treatment with antiretrovirals and the challenges of managing multiple medications and their interactions; and immune reconstitution inflammatory syndrome (IRIS) [2].

For every patient who is diagnosed with and treated for MDR TB in southern Africa, it is likely that several more are diagnosed and not treated. Further, an even larger number of those infected with MDR TB are never diagnosed because diagnostic capabilities are inadequate or because these people die without ever having been seen and diagnosed through the health care system. It has been noted that in South Africa alone, defaulter rate of those on second-line TB treatment is at 20% with no difference between HIV positive and HIV negative TB.
patients (WHO 2008). It was also noted that patients coinfected with HIV were three times more likely to die than patients without HIV [3].

Muti-drug resistant TB (MDR-TB) is TB which cannot be treated by the usual first line anti-TB drugs. TB can usually be treated very effectively with a 6-month course of four first line anti-TB drugs (Isoniazid, ethambutol, rifampicin). These drugs are safe, inexpensive and effective. However, if patients are incorrectly treated or do not complete their full course, drug resistant strains of Mycobacterium tuberculosis can arise. Multidrug-resistant Tb (MDR-TB) Is defined as TB resistant to the two most potent first line anti-TB drugs (isoniazid and rifampicin). Once MDR-TB emerges, first-line anti-TB drugs will no longer work and second line drugs (Fluoroquinolones, kanamycin, capreomycin, amikacin) have to be used [4].

Second line anti-TB drugs require a lengthy (up to 24 months) treatment and are 100 times more expensive and patients experience more severe and unpleasant side-effects than with the first-line drugs. The drugs are not readily available yet it is vital that MDR-TB treatment is used correctly and not interrupted to prevent additional resistance developing leading to Extensively drug resistance TB (XDR).

MDR-TB spreads to vulnerable individuals in the same way as drug-susceptible TB, and infected persons have the same risks of developing active disease in the presence of HIV as those infected with a drug-susceptible TB. We cannot talk about MDR-TB and leave XDR-TB as this develops due to mismanagement or misuse of the MDR-TB drugs which become ineffective. Because XDR-TB strains have developed resistance to most of the first-line and second-line drugs available to treat TB, and is potentially untreatable. XDR is defined as Mycobacterium tuberculosis which multi-drug resistant, with additional resistance to a fluoroquinolone and one or more of the injectable drugs (kanamycin, amikacin, capreomycin), which are second line drugs of choice [5].

XDR-TB was first reported in Kwazulu Natal in 2006 [1] were in a group of 53 XDR patients, all but one died within an average of 25 days from the point when drug-resistant TB was first suspected. Forty four of the 53 patients were HIV positive. The case scenario therefore becomes the same in other Southern African countries with high HIV rates like Swaziland. High TB rates of infection due mostly to poverty. Swaziland is surrounded by South Africa and
us it is affected also by the South African TB/HIV statistics as there is more interaction of the populations. This is the same case scenario with Lesotho which also has a high rate of HIV/TB infections [6, 7, 8].

This study looks at the data collected in Swaziland TB National reference laboratory and the attitude of non-nursing staff on ways of controlling the spread of TB in Kwazulu natal South Africa.

OBJECTIVES
To assess the attitude, knowledge and beliefs of the non-clinical staff towards TB AND IPC related issues in Kwazulu natal. Analysis of the TB culture results from Swaziland reference laboratory.

MATERIALS AND METHOD
Objective 1, data was collected using self-administered close ended questionnaire between April 2011-Nov 2011 in Kwazulu Natal South Africa.

Objective 2, sputum samples received in The National TB reference laboratory Swaziland were cultured using MGIT automated instrument using 4% NAOH concentration method (CDC).

- Positive cultures were confirmed as MTB complex using ZN smears and TB Ag MPT 64 identification test.
- Drug susceptibility testing was done on RIF, INH, Streptomycin and ethambitol using 1% proportion method.
- Resistant cultures were sent to MRC Laboratory South Africa for second line drug susceptibility testing.
RESULT

a) Overall summary of culture results

Table no. 1

CULTURE RESULTS

b) Break down of culture positive results

Table no. 2

Culture results and outcomes
c) Survey results

Table no. 3

Non clinical staff attitude

79 closed questionnaires

CONCLUSION

Dr. Mario Raviglione, Director of the WHO STOP TB Department, said that the fight against TB and XDR-TB is now the responsibility of a wide range of individuals and organizations. Most importantly, TB control programmes need to function effectively and patients with TB need access to proper drugs and should adhere to treatment regimens according to WHO guidelines (WHO 2008).

It is also crucial to administer second line TB drugs under very tightly controlled conditions so that they retain their potency.

The cultural values and stereotypic issues around TB, MDR, XDR should also be addressed through proper information dissemination to the affected populations and should be considered as the paramount factor in understanding an individual will complete treatment or not.
REFERENCES


