Multidrug-resistant tuberculosis at the National Hospital, Abuja, Nigeria

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Abstract

Five hundred (500) cases of pulmonary tuberculosis (TB) were seen at the Chest Clinic of the National Hospital, Abuja, Nigeria over a 2-year period (2004–2005). The diagnosis and management of multidrug-resistant (MDR) TB were studied as part of DOTS-Plus: Directly Observed Treatment Short-course (DOTS) programmes that add components for MDR-TB diagnosis, management, and treatment. The cases of pulmonary TB that showed mycobacterium resistance to rifampicin and isoniazid (MDR-TB) using the Lowenstein–Jensen (solid medium) slope at the National Hospital and later using BACTEC 460 available at Zankli Medical Center at Abuja, were treated with the standard WHO-recommended regimen for MDR-TB and the outcomes were studied. Twenty cases (4%) of MDR-TB were recorded; all 20 were also HIV-positive. One (8%) died and 19 (95%) were apparently cured at the end of therapy. This is the first report of MDR-TB and DOTS-Plus in Nigeria. There is an urgent need to study the MDR-TB pattern in Nigeria as extensive resistant TB (XDR-TB) has now been reported which is even worse prognostically than MDR-TB.

Introduction

Multidrug-resistant (MDR) TB is defined as tuberculosis caused by organisms resistant to at least isoniazid and rifampicin, the two most potent first-line drugs.[1] To date, the prevalence of MDR-TB has not been reported in Nigeria, and in Abuja in particular. The need to determine the prevalence of MDR-TB has become even more important in view of the HIV/AIDS pandemic.

The Chest Clinic of the National Hospital, Abuja receives chest cases from other departments of the hospital and from other government and private hospitals within the Abuja metropolis, and from several other hospitals in Nigeria. The study was to document the existence of MDR-TB at the National Hospital as a pilot study and to pave the way for the determination of its prevalence in Nigeria.

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Methods

The diagnosis of pulmonary TB (PTB) cases were made using the Ziehl–Neelson (Z–N) stain with positive results on at least two occasions, according to World Health Organization (WHO) recommendations.[2,3] Sputum culture could not be carried out on all cases due to its prohibitive cost. However, all cases that were not sputum converted after the 2 months intensive therapy for newly diagnosed cases, or 3 months of intensive therapy for re-treatment therapy, had sputum culture done using a Lowenstein–Jensen slope (solid egg medium). A few were cultured using the BACTEC 60 system (Becton Dickinson), available at the Zankli Medical Center in Abuja. An absence of growth after 42 days was considered negative. Those with resistance to both rifampicin and isoniazid were classified as MDR-TB.

The cases with MDR-TB were placed on aminoglycoside (amikacin 15 mg/kg, i.m. injection), ethionamide (15 mg/kg orally at bedtime), pyrazinamide (25 mg/kg orally), ofloxacin (400 mg orally in divided doses), and ethambutol (20 mg/kg orally for the first 3 months); followed by ethionamide, ofloxacin, and ethambutol for 18 months. All other cases of smear-positive PTB that were not MDR-TB had the standard recommended regimen.[2,3] All drugs were administered using DOTS.

Side-effects were monitored closely, especially in the MDR-TB and laboratory tests, including liver function tests, full blood tests, urea, electrolyte and creatinine, fasting blood sugar, and uric acid. Tests were carried out every 2 to 4 weeks as deemed necessary, based on individual patient complaints. Anti-retroviral therapy was suspended during this therapy to avoid the side-effects of drug combination. Amikacin and ethionamide are not available in Nigeria and were ordered from abroad by the author and paid for by the patient accordingly.

Results

Some 500 cases of PTB were seen over a 2-year period, i.e. January 2004 to December 2005. Twenty patients (4%) did not have their sputum converted after the intensive phase. All 20 were HIV-positive and showed bacilli that were resistant to both rifampicin and isoniazid. One (5%) did not respond to therapy and died from acute haemoptysis.

Discussion

MDR-TB is TB with bacilli resistant to at least isoniazid

and rifampicin, the main antituberculosis drugs. It has become an important concern for TB control in many countries,[4,5] especially in low-income countries where the burdens of other competing diseases like malaria, enteric fever, meningitis, etc. abound.

MDR-TB originates from human error, especially lack of supervision, monitoring of treatment, and lack of patient support. DOTS was introduced a long time ago but is not well applied globally. Poor infection control practices in over-crowded settings and the poor knowledge of physicians in terms of drug combinations used for the treatment of PTB also contributes greatly to the emergence of MDR-TB. Several studies have shown[6,7] that physicians attending to TB cases used incorrect and sub-optimal doses, including monotheraphy for many TB cases, and this ultimately leads to MDR-TB. The weak health systems in many of those countries where MDR-TB has been reported is also a major factor in the pathogenesis of this problem.

WHO has already put in place guidelines for the management of drug-resistant TB.[8] However, a conference held in Johannesburg in 2006 – jointly organised by the South Africa Medical Research Council, CDC, and WHO recommended seven steps needed to control MDR-TB. These are outlined as follows:

- the need to develop emergency response plans for MDR-TB;
- the need to conduct rapid surveys of MDR-TB;
- the need to strengthen and expand current national TB laboratories;
- the need to implement infection control precautions in healthcare facilities;
- the need to establish capacity for clinical and public health managers to respond to MDR-TB;
- the need to promote universal access to anti-retroviral therapy for all TB cases in collaboration with HIV/AIDS committees;
- the need to intensify research and development of anti-TB drugs and rapid diagnostic tests for MDR-TB.

This work was carried out in line with these recommendations to conduct a rapid survey of MDR-TB in Abuja. It is hoped that shortly a total survey will be carried out by the Federal Ministry of Health in collaboration with WHO, CDC, etc to elucidate the scale of this problem in Nigeria and subsequently put in place the other suggestions as stated here.

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