ISSN 2320 7159

INERNATIONAL JOURNAL OF MEDICAL RSEARCH

CASE REPORT

Family-Member Variant of Directory Observed Therapy Short Course (DOTS) in Current Pulmonary Tuberculosis (PTB) Management: A Way Out in Resource-Constrained Settings – A Case Report

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ARTICLE INFO

doi: 10.5455/ijmr.20160724120220

Keywords:
Pulmonary tuberculosis,
Family-member DOTS,
Family dynamics,
Resource-constrained setting

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ABSTRACT

Appreciation of patients' family dynamics may be very crucial in deciding the appropriate treatment option aimed at reducing treatment failures and drug resistance in the management of pulmonary tuberculosis especially in the resource-constrained settings.

We reported a case of a 62 year old retiree with pulmonary tuberculosis who had financial challenges and was successfully treated using the family-member variant of DOTS. This modality of treatment was easily accepted and eventually addressed some of the financial challenges the patient had.

Family-member variant of DOTS was successfully demonstrated in the management of PTB and was seen to have reduced the variable cost of treatment, distortion of family dynamics and enhanced family harmony.

BACKGROUND

Tuberculosis is a preventable and curable disease, yet it is a global pandemic with high morbidity and mortality especially in resource-constrained settings and developing countries like Nigeria.[1, 2, 3, 4, 5] This morbidity and mortality are further compounded by the low socio-economic status of the people and the high prevalence of HIV. This is influenced by the level of immunity of the individual and environmental factors that the individual is exposed to such as poor housing (ventilation) and overcrowding.[6]

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* - an acid, alcohol fast bacillus and it is transmitted by aerosols. Other bacteria of

lesser importance include *Mycobacterium bovis*, *Mycobacterium microti* and *Mycobacterium africanum*. Tuberculosis can affect any part of the body with the pulmonary system being most vulnerable. The use of the conventional Directly Observed Therapy Short-course (DOTS) modality as a form of treatment involves diagnosis, follow up through sputum microscopy, regular uninterrupted drug supply, accurate recording system and direct observation of treatment by a health worker. [6] This modality of treatment was meant to increase the cure rate and subsequently reduce multi-drug resistance tuberculosis from poor adherence to medication. [4] The integration of a health worker in the conventional DOTS increases variable treatment cost on the patient, dependence on already overstretched health facilities and consequently affects family dynamics (which is the normal flow of interactions among family members). Another variant of DOTS is the family-member based variant. This variant involves a reliable family member at home in place of a health worker for daily supervision of drugs to enhance adherence. Promotion of the use of family-member DOTS variant in resource-constrained settings will help reduce this cost, dependence on already overstretched health facilities and most importantly increase family harmony.

CASE PRESENTATION

Mr FD was a retired civil servant who lived some distance to the chest clinic of Plateau State Specialist Hospital Jos where he presented with cough and weight loss of six weeks duration. The cough was productive of blood stained sputum. There was associated anorexia and low grade evening pyrexia. Other medical history was not contributory. He had taken amoxicillin and co-trimoxazole without any significant improvement. He was living with his wife but financially depended on his son who lived within the neighbourhood but hardly visits them for any reason.

Examination revealed obvious wasting and his weight was 59kg. He was not pale and afebrile with no jaundice, finger clubbing and no significant lymphadenopathy. His chest findings and other systemic examinations were not remarkable.

Alcohol Fast Bacilli (AFB) were present (+) in two of the three sputum samples while the sputum microscopy, culture and sensitivity did not yield any pathological growth. Chest radiograph showed bilateral streaky patchy opacities and right hilar lymphadenopathy (figure 1). The packed cell volume was 37%. The total white cell count was 6.3.x10 ^{9}/L with neutrophils-59%, lymphocytes-37%, monocytes-4%. Erythrocyte sedimentation rate (ESR) was 120 mm in the first one hour. The liver function test was normal. Mantoux reaction was 11 mm while human immunodeficiency virus (HIV) screening was negative.

A diagnosis of smear positive pulmonary tuberculosis was made.

FD received counselling for the diagnosis and on treatment modalities (including conventional DOTS). He however expressed difficulty coming to the hospital daily for the two months of intensive phase of treatment due to financial constraints and distortion of family dynamics (as it interfered with the son's work since he would be responsible for bringing him to the hospital daily).

Family-member variant DOTS an alternative modality of treatment which involved the same supervision but by a reliable family-member at home was accepted by him. The DOTS unit in the hospital was contacted and agreed to supply him the drugs monthly to be taken under supervision by a family member.

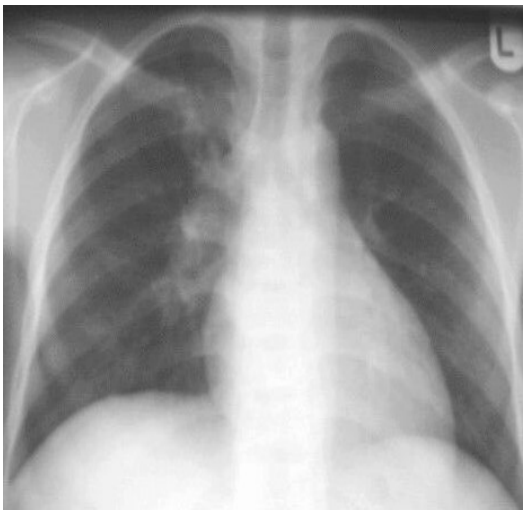

Figure 1: Chest radiograph of Mr FD showing features of pulmonary tuberculosis before treatment (right hilar lymphadenopathy with bilateral streaky opacities).

Figure 2: Chest radiograph of Mr FD showing minimal opacities after treatment.

F.D was commenced on anti-tuberculosis therapy with rifampicin, pyrazinamide, ethambutol, isoniazid and pyridoxine for 2 months duration at home under the supervision of his wife and son. The role of supervision made the son closer to his parents than previously and was also of support to them daily in many ways. FD became smear negative at the end of the intensive phase of the treatment. He was continued on rifampicin and isoniazid as well as pyridoxine daily in the continuation phase of treatment and was followed up on monthly basis in the chest clinic. He continued to improve at each clinic visit and was eventually assessed to have been cured of pulmonary tuberculosis after six months of treatment. This was evident by resolution of symptoms, weight gain, negative sputum AFB and resolution of features on chest radiograph (figure 2).

DISCUSSION

Family–member variant of DOT which involves a family-member in administration of medications is not only a successful treatment modality with global acceptance, it also strengthens family-member interrelationship.[7, 8] This modality of treatment was considered in relation to the daily transport fare the patient would incur especially as he was a retiree and was financially dependent on his son. Conventional DOTS was also going to affect the son who would have been responsible for bringing him to the hospital daily at the expense of his work. These were the reasons why the family-member variant DOTS was favoured more than the conventional clinic DOTS which involves daily supervision in the hospital by a health worker. The patient was allowed to take medications at home supervised by the wife and son and only to come to the hospital for follow up. He improved and recovered well without any complication.

The overall outcome in terms of cure rate in the conventional clinic DOTS and the family-member variant of DOTS had been a matter of debate but studies have now shown either similar cure rates or potential advantage in cure rate and acceptability compare to the conventional clinic based DOTS. [9, 10]

Conclusion

Family-member variant DOTS being an evolving modality of PTB treatment was successfully demonstrated in the management of the index case. This case therefore underscores the importance of family-member variant DOTS in reducing the variable cost of treatment, distortion of family dynamics thereby enhancing family harmony. It also prevents further stretching of already over-stretched health facilities in resource-constrained health institutions. We therefore recommend that this evolving variant of DOTS be appropriately used especially in resource-constrained settings.

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