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Research Article

DIRECTLY OBSERVED TREATMENT SHORT-COURSE FOR TUBERCULOSIS: A THREE-YEAR SURVEY OF THE TREATMENT OUTCOME IN A TEACHING HOSPITAL IN NORTHEASTERN NIGERIA

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ABSTRACT
The major challenges of treating patients with pulmonary tuberculosis have been those of compliance and increasing incidence of multi-drug resistance. The use of directly observed treatment-short course (DOTS) has been widely reported to improve treatment success in settings where this treatment strategy recommended by the World Health Organization was implemented. Therefore the study was to determine the success rate of implementing DOTS strategy to patients with pulmonary tuberculosis in the University of Maiduguri Teaching Hospital, Nigeria. A survey of the records of treatment of patients with pulmonary tuberculosis using the DOTS strategy over a three-year period from January, 2007 to December, 2009 in the Teaching Hospital was retrospectively carried out. Treatment success (Cure and treatment completion) was recorded in 1434 (85.5 %) patients, while 203 (12.1%) patients either defaulted or were lost to follow up. Forty-one (2.4 %) patients died in the course of treatment. The DOTS strategy in the Teaching Hospital was effective since the success rate was close to the projected value for the whole country.
Key words: Treatment, short-course, tuberculosis, outcome

INTRODUCTION

Tuberculosis is a global emergency with increasing incidence among urban poor. It is one of the major causes of adult deaths every year. Fundamental objectives of tuberculosis (TB) control are to detect disease as early as possible and to make sure that those diagnosed complete their treatment and be cured. In mid 1990s, Directly Observed Treatment Short course (DOTS) strategy was adopted as basis of TB control[1]. Treatment success under the DOTS strategy was determined by cure and treatment completion while unsuccessful treatment included patients who failed and defaulted[2]. One of the major barriers to successful treatment outcome is default from treatment. In 2006, WHO had reported 5% default rate for smear positive pulmonary tuberculosis (PTB) patients[1]. In developing countries, the major contributing factors to poor compliance to anti-TB drugs are feeling of being completely cured once signs and symptoms are resolved[3], lack of patient motivation, side effects of drugs, duration of the treatment and the general poverty of the population affected, as well as socio-psychological factors[4]. Default or interruption from treatment may result in persistent infectiousness[5], relapse, drug resistance[6] and increased morbidity and mortality[7]. Nigeria has the fourth largest burden of TB in the world.[8, 9] In order to promote drug adherence, WHO has emphasized on patient centered approach.[10] Directly observed treatment short course (DOTS) was introduced in 2004 in the University of Maiduguri Teaching Hospital (UMTH) Northeastern Nigeria and since then the success or otherwise of DOTS in UMTH has not been reported. Therefore, this study was to determine treatment success of directly observed treatment short course (DOTS) in the University of Maiduguri Teaching Hospital (UMTH) over a three-year period (January 2007 to December 2009).

MATERIALS AND METHOD

Following the Local Research and Ethics Committee approval, retrospective survey of the records of the patients with PTB who attended the DOTS Centre in the UMTH over a three-year period (January 2007 to December 2009) was carried out. The information retrieved from the patients' treatment records included: demographic data, method of diagnosis, date of initiation of treatment and drugs used.

The inclusion criteria for the study were patients who were sputum acid fast bacilli (AFB) positive, HIV negative and those patients who started and completed their therapy in the DOTS Centre excluding patients who were transferred out because their treatment outcome could not be ascertained. For children, those who were diagnosed with a positive Monteux test and chest x-ray showing infiltrates, nodules, consolidations, cavities at lower lobes of the lungs were included.

A total of 1678 patients who attended the UMTH DOTS Centre over the three-year period benefited from the supply of anti-TB drugs. The regimen dispensed to the patients was that of rifampicin, isoniazid (INH), pyrazinamide and ethambutol for the intensive phase of two months. Then INH and rifampicin for continuous phase were used for four months. For relapse, failures, relapse after default and others, the regimen dispensed to such patients was that of rifampicin, isoniazid (INH), pyrazinamide, ethambutol and streptomycin for the intensive phase of three months. Then INH and rifampicin were used for a period of five months[1]. All the anti TB drugs used were in fixed ratio - combination tablets except streptomycin, which is an injection.

In addition, the stock records of anti-TB drugs supplied over the period under review and the interview of the supervising health workers in the DOTS Centre were carried out. The purposes of these were to identify if there were problems in the anti-TB drug supply line and subsequent dispensing to the patients.

Treatment outcome of tuberculosis was reported on the basis of classification (Table 1) which has been developed and recommended by the working group of WHO and International Union against Tuberculosis and Lung disease (IUATLD)[1].

RESULTS

A total of 1,678 TB patients had attended the DOTS Centre, UMTH over a period from January 2007 to December 2009. The patients were recruited through different methods: new, relapse, failure, transferred in, and others (Table 2).The population of the patients was made up of 946(56.4%) males and 732(43.6%) females, giving a ratio of 1.3:1 (Table 3).The age range for the recruited patients was from 6 to above 35 years (Table 4).

Both verification of the drug stock records and the refill of patient`s prescriptions confirmed regular supply to the DOTS Centre and subsequent dispensing to the patients during the studied period. There were no stock outs. However, the response of the interview with the health workers at the DOTS Centre revealed that patients were properly counseled at the drug dispensing point on the importance of adherence to treatment but were not observed taking their drugs on daily basis. Rather the patients were observed on weekly basis when they came for prescription refill because most of them could not afford to pay their transportation to the hospital on daily basis. There were too few health workers to reach out to the patients and the workers were not adequately motivated to carry out their duties optimally. Thus, the prescription refill was the only way used to assess the patients` compliance. Treatment success (cure and treatment completion) was recorded in 1434 (85.7 %) patients, while 203 (12.1%) patients defaulted/lost to follow up. Forty-one (2.4 %) patients died in the course of treatment (Table 5).

DISCUSSION

The University of Maiduguri Teaching Hospital DOTS Centre, among several others, served the patients with PTB residing within Maiduguri metropolis. The demographic pattern of patients attending the DOTS Centre showed that the majority of the patients with PTB studied fell within the age group of 15 to over 35 years. This age group has been known to be the peak incidence of PTB. There was no difference in the ratio of males to females presenting for treatment and that was consistent with the finding elsewhere[9]. A yearly increase in number of patients presenting with PTB at the DOTS Centre was observed over the three-year period (2007-2009). This increase was possibly due to patients` awareness to the DOTS programme that provided free medications for tuberculosis. Studies[2,6] have shown that cost of anti-tuberculosis drugs has been one of the barriers to accessing treatment.

The UMTH DOTS programme had recorded 85.5% success rate in the treatment of PTB over the studied period. Though the success rate reached the rate projected for Nigeria[8], it was lower than 90-95% global success rate of treatment[1].On the other hand, the default rate was 12.1%, certainly higher than the reported 5% global default rate. Forty-one (2.4 %) patients died in the course of treatment. The most likely cause for the high default rate could be economic problem as the health workers interviewed, revealed that most patients could not afford transportation to DOTS Centre. Another reason could be that the health workers in the Centre were too few to either directly supervise or effectively communicate with the patients or responsible relatives on daily basis to ensure compliance with treatment. Also the tendency to stop treatment due to feeling of being completely cured once sign and symptoms were resolved could be responsible for the high default rate. This trend has been noted in other studies from different parts of the world[3,6,7].

CONCLUSION

The use of directly observed treatment short-course as the standard treatment for tuberculosis in the University of Maiduguri Teaching Hospital was effective since the treatment success rate was found to be consistent with the projected success rate for the whole country. The success rate could be improved by laying emphasis on employing well-trained and highly motivated health workers who would reach out to patients or responsible relatives in order to ensure patients take their drugs on daily basis to prevent default and subsequent development of multi-drug resistance. Also regular provision of free drugs in the DOTS Centre should be sustained. More DOTS Centres should be built within the reach of the patients to reduce the burden of transportation to the UMTH DOTS Centre.

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Table 1: Tuberculosis treatment outcome categories according to WHO and IUATLD recommendations

Outcome	Definition
Cure	A patient whose sputum smear or culture was positive at the beginning of the treatment but who was smear- or culture-negative in the last month of treatment and on at least one previous occasion.
Treatment completed	A patient who completed treatment but who does not have a negative sputum smear or culture result in the last month of treatment and on at least one previous occasion.
Treatment failure	A patient whose sputum smear or culture is positive at 5 months or later during treatment. Also included in this definition are patients found to harbor a multidrug-resistant (MDR) strain at any point of time during the treatment, whether they are smear-negative or -positive.
Died	A patient who dies for any reason during the course of treatment
Default	A patient whose treatment was interrupted for 2 consecutive months or more.
Transfer out	A patient who has been transferred to another recording and reporting unit and whose treatment outcome is unknown.
Treatment success	A sum of cured and completed treatment.

Table 2: Patient recruitment for period of 2007 to 2009

Method	Yearly distribution			Distribution in 3 years (%)
	200 7	2008	2009	
New	506	526	521	1553(92.6)
Relapse	8	9	14	31(1.8)
Failure	2	1	2	5(5.03)
Transferred in	24	6	30	60(3.6)
Return after default	4	12	13	29(1.7)
Total	544	554	580	1678(100)

Table 3: Sex distribution of tuberculosis patients

Sex	Yearly distribution of patients			Total in 3 years (%)
	2007	2008	2009	
Male	305	306	335	946(56.4)
Female	239	248	245	732(43.6)

Table 4: Age distribution of tuberculosis patients

Age (years)	2007	2008	2009	Total in 3 years (%)
<6	36	33	56	125(7.4)
6 – 15	30	29	30	89(5.3)
16 – 25	98	107	108	313(18.7)
26 – 35	173	180	163	516(30.8)
>35	207	205	223	635(37.8)
Total	544	554	580	1678

Table 5: Treatment outcome for 2007, 2008 and 2009

Treatment outcome	Yearly distribution of patients			Percentage rate in 3 years (%)
	200 7	2008	2009	
Cure and treatment completion (success rate)	465	455	514	1434 (85.5)
Lost to follow up/default	79	74	50	203 (12.1)
Death	-	25	16	41(2.4)
Total	544	554	580	1678(100)

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