TREATMENT OUTCOMES OF TUBERCULOSIS PATIENTS REGISTERED AT DOTS CENTRE KOHAT

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ABSTRACT

OBJECTIVE: To find out the treatment outcomes of patients suffering from tuberculosis at DOTs centre.

METHODOLOGY: This descriptive analytical study on tuberculosis and its treatment outcomes was conducted at DHQ Teaching Hospital Kohat from July 2008 to January 2011, over a period of two and a half years. Data was interpreted by using SPSS version 14.

RESULTS: In this study total number of 1760 patients are included, out of which 943(53.6%) are females and 817 males (46.4%). AFB positive patients are 43%, extra pulmonary 32.2% and sputum negative pulmonary cases are 24.6%. Treatment outcomes showed 574 cured, 726 treatments completed 422 defaults, 16 deaths and one referred to other treatment centre. Seven patients remained 3 AFB positive till 7th month.

CONCLUSION: The proportion of favorable outcome was below the goal set by the WHO. Tuberculous case management needs to be investigated to reduce the chances of high default rate.

KEY WORDS: Tuberculosis, TB, DOTS, Outcome

INTRODUCTION

Effective drugs for the treatment of tuberculosis have been available since the late 1940s, yet 2 million people continue to die each year and the disease remains the commonest cause of death in adults in developing countries.[1] Poor adherence to anti-tuberculous treatment regimens and poor rates of completion of treatment courses are major barriers to the effective management of tuberculosis and a cause for increasing multidrug resistance.[2]

There is evidence to support the effectiveness of the overall DOTS strategy and direct observation of treatment from a number of observation studies.[3,4] How-ever, a systematic review of the evidence for direct observation from randomized controlled trials found that although one trial from Thailand demonstrated significant improvements in cure and treatment, two other trials from South Africa and Pakistan found similar outcomes for directly observed and self-administered patient treatment groups.[1,5,6] Furthermore, DOT incurs considerable costs to the patient attending for direct observation and requires considerable healthcare resources, particularly in countries where the prevalence of TB is high.[7]

The World Health Organization (WHO) promotes another version of DOT called 'directly observed therapy, short course' (DOTS). This is a comprehensive tuberculosis management programme that focuses on low-income countries. DOTS is a five-element strategy for the control of tuberculosis that consists of political commitment, improved laboratory analysis, direct patient observation while swallowing each dose of medication, a drug supply that provides for the correct complete short course antituberculous drug combination for free, and a reporting system that documents the progress in curing the patient.[8]

Adherence to TB treatment is the most important requirement for efficient TB control.[9] TB treatment presents particular challenges for adherence because a standard treatment lasts 6 or 8 months and involves taking a number of medications, and side-effects are common during the treatment.[10] Poor adherence to TB therapy is regarded as the most common cause of treatment failure and disease relapse, which contributes to patient morbidity, mortality, transmission and drug resistance.[11,12] TB treatment usually consists of 2 phases: an intensive phase with a combination of four drugs for 2 months and a continuation phase with 2 drugs for 4 to 6 months.[13,14] Compliance and patients defaulting anti TB treatment contribute to the increase of multi-drug-resistant mycobacteria.[15] Default is defined by the WHO as a treatment interruption of two consecutive months or more after at least one month on treatment.[16]

METHODOLOGY

This observational study on tuberculosis and its treatment outcomes; was conducted at DHQ Teaching Hospital, Kohat from July 2008 to January 2011. The DOTS centre of the hospital works under the National TB Control Program. The TB control program uses the WHO Directly Observed Treatment Short Courses (DOTS) strategy. Patients were referred by the physicians to DOTS centre in addition to those who directly presented. Cases were diagnosed on clinical presentations like cough, fever, household contact and radiological findings. Three consecutive days sputum was screened for Acid Fast Bacilli (AFB) by Ziehl-Neelsen staining. Sputum negative Extra-pulmonary TB cases were diagnosed on ascetic / pleural fluid cytology and biochemical analysis-Rays, histopathological examination of lymph nodes and response to Anti-Tuberculous Therapy (ATT).[17] HIV positive patients were excluded from the study. Treatment outcomes were recorded in form of cured (for sputum AFB positive patients), treatment completed, treatment failure, relapse, deaths and missing. Treatment was given according to national TB control program. A patient was considered cured if confirmed to be sputum negative at 7 months and/or on one previous occasion. A patient was classified as having completed treatment if treatment was completed but smear results were not available on at least two occasions prior to completion of treatment. Treatment failure was recorded for patients who remained or became smear positive at 7 months or later. Default was recorded for any patient who failed to collect medication for more than two consecutive months after the date of last attendance during the course of treatment. Transferred out was recorded for patients who formally transferred to another treatment centre.[18] Data was analyzed by SPSS version 14, and study was approved by ethical committee.

RESULTS

In this study total number of patients was 1760; females being 943 (53.6%) and males were 817 (46.4%). Mean age of the patients is 34.61 years. Patients in the first two decades of life were 28%. Patients in third, fourth, fifth and sixth decades were 27%, 13.5%, 11% and 10% respectively, whereas older patients were 9.6%. Category I patient constitute 99.2% of the total, whereas category II (Relapse/failure) is forming 0.4% of the total and others are 0.1%. AFB positive patients are 43%, extra pulmonary 32.2% and sputum negative pulmonary cases are 24.6%.

The difference between type of extrapulmonary TB and sputum positive TB in males and females is not statistically significant (0.07852) Table III. Similarly difference between sputum positive and negative in both genders is statistically not significant Table IV. Treatment outcomes difference, of cured between male and female is statistically significant i-e p value is 0.0044, where as difference of male and female in default rate is not statistically significant i-e 0.7446.

DISCUSSION

Efforts to improve treatment outcomes require a better understanding of the barriers of adherence to TB treatment. Declaring treatment outcomes is important for monitoring the quality of case management and the progress of TB control programs Studies conducted in China show that a number of factors associated with non-adherence include the health system, patient-related and socio-economic factors.[19,20,21]

Sputum positive cases are more than sputum negative and extra pulmonary cases. Out of 759 sputum positive cases 691(91%) became negative at two months of sputum examination, whereas 58 patient remained positive at this stage. Further examination of sputum at 7th month shows that majority of the patients became sputum negative, achieving 81% cure rates whereas 8

TABLE 1: AGE CATEGORY AND GENDER OF THE PATIENTS

Gender	Age category (in years)						Total
	<20	21-30	31-40	41-50	51-60	60+	
Male	195	242	102	79	98	101	817
Female	302	239	135	119	80	68	943
Total	496	481	237	198	178	169	1760

TABLE II: GENDER AND TYPE OF TUBERCULOSIS

Gender	Type of Tuberculosis			Total
	AFB Positive	Extrapulmonary	Sputum negative pulmonary	
Male	345	262	210	817
Female	414	305	224	943
Total	759	567	434	1760

TABLE III: CHI-SQUARE TEST TO COMPARE GENDER DISTRIBUTION IN SPUTUM NEGATIVE VERSUS SPUTUM POSITIVE TB

		sputum		
		AFB -ive	AFB+ive	P value
Gender	Male	210	345	
	Female	214	414	0.155

TABLE IV: CHI-SQUARE TEST TO COMPARE GENDER DISTRIBUTION IN EXTRAPULMONARY TB VERSUS SPUTUM POSITIVE TB

		Type of TB		
		EXP	AFB +ev	P value
Gender	Male	262	345	
	Female	305	414	
Total				0.07852

TABLE V: AFB STATUS AT THE END OF 2ND AND 7TH MONTHS

Month	AFB Negative	One AFB Positive	Two AFB Positive	Three AFB Positive	Default	Died	Total
2nd	691 (91.04%)	40(5.27%)	9(1.18%)	9(1.18%	0	10	759
7th	622(81.94%)	1(0.13%)	0	7(0.92%)	119	10	759

TABLE VI: GENDER & TREATMENT OUTCOMES AT COMPLETION OF TREATMENT

Gender	Cured	Treatment completed	Default	Referred to MDR centre	Died	Transferred out	Total
Male	251	347	209	1	9	0	817
Female	379	233	233	0	7	1	943
Total	574(32.6%)	726(41.3%)	442(25.11%)	1	16	1	1760

Treatment outcomes showed 574 cured, 726 treatments completed, 442 defaulted, 16 died and one referred to MDR centre.

patients remained sputum AFB positive. Drug resistance can be a major contributing factor in these patients as they all are HIV negative. These cases must be offered drug susceptibility testing and 2nd-line TB drugs at the earlier stage of the treatment.[22] A significant number of sputum positive patients defaulted during the treatment. This is alarming as sputum positivity enhances speed of transmission. Moreover poverty, lack of awareness and delay in diagnosis further deteriorate the condition.

The cure/treatment completion rates in the present study is 32.6% and 41.3% respectively (making a total of 73.9%). This result however, is not comparable with Gupreet Kaur et al study's result

that is 98.6% and 90.4% respectively.[23] Many industrialized countries with comprehensive health care and a secure supply of drugs free of charge for patients have not reached the overall objective of 85% with successful outcome, set by WHO.[24,25] In Western Europe, successful outcome was reported for 81% in extra-pulmonary tuberculosis.[26] In a Danish national cohort analysis, the proportion with favourable outcome in extra-pulmonary tuberculosis was 68%.[24]

The default cases have decreased the number of satisfactory treatment outcomes. This data is showing death of 16 patients. The actual number may be higher than this, as many patients defaulted during the follow up. Patients'

adherence to their medication regimens has been reported to be influenced by the interaction of number of factors .[27] These factors may be grouped as: health-system factors, social and family factors, and personal factors.[28]

CONCLUSION

The proportion of favourable outcome was below the goal set by the WHO.[29] However ways to improve TB case management need to be investigated to reduce the chances of default, recurrence and treatment failure.[29]

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

NBT: Study design, acquisition & analysis of data, drafting the manuscript, final approval of the version to be published

QTU: analysis of data, final approval of the version to be published

MS: drafting the manuscript, final approval of the version to be published

AMK: critical revision, final approval of the version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.