Original Article

Factors Associated with Tuberculosis Treatment Default

Tuberculosis Treatment Default

1. Javed Akhter Rathore 2.Zulifqar Ali Kango 3.Mohammad Saleem

1. Asstt. Prof. of Medicine, AJK Medical College Muzaffaraabad 2. Asstt. Prof. of Medicine, AJK Medical College Muzaffaraabad 3. Consultant Physician, DHQ, Kotli, Azad Kashmir

ABSTRACT

Objective: This study analyzed tuberculosis treatment default determinants in the Muzaffarabad Azad Kashmir in order to plan the effective interventional tuberculosis control program.

Study Design: Prospective cross sectional cohort study

Place and duration of Study: This study was carried out at Azad Kashmir Combined Military Hospital (AK CMH)/Sheik Khalifa Bin Zyad (SKBZ) Muzaffarabad (MZD) designed for patients defaulting from tuberculosis treatment from 1.1.2013 to 31.12.2013.

Material and Method: This study included 110 adults with diagnosis of TB treatment default. The study protocol incorporated structured questionnaire, physical examinations, radiological, laboratory investigations and potential factors for TB treatment defaults. The statistical analysis was performed using SPSS-20.The chi square test was done and $p<0.05$ was considered as statistical significance.

Results: PLUM-Ordinal regression analysis revealed that many clinical variables have statistical significant association with tuberculosis treatment defaults. Factors identified to be associated with treatment default were; male gender ($p<0.007$), distance from the health post ($p<0.007$), displacement $p<0.024$), financial Constraints ($p<0.001$), no body at home to bring medicine or take patients to hospital ($p = 0.001$), route closed in winters ($p = 0.001$), improvement from symptoms (0.009) and went abroad (0.001).

Conclusion: Determinants of treatment defaults and associated factors should be considered in treatments plan and policy actions to tuberculosis control programs. Information on disease, treatment plan and education of the individual along with population should be done in order to minimize treatment default and spread of multi drug resistance to anti-TB drugs.

Key Words: TB, Anti TB Drugs,TB Control Programme

INTRODUCTION

Tuberculosis (TB) and treatment default is a major public health problem in our county. The endemic of TB increased the need for effective strategies for its control. The prevalence account for 80% of cases of TB worldwide.[1]and Pakistan is eighth among 22 high burden countries of TB in the World.[2]The default rates of TB have been increasing day by day. Treatment default is a dangerous problem in TB control and can lead to persistence of infectious, increased relapse rates and emergence of resistant strains.[3-4]Mortality rates are high among TB patients who discontinue treatment and also associated with comorbidities ei.HIV infection.[5-7] A treatment default result in multidrug-resistant tuberculosis (MDR-TB) is defined as resistance of the TB bacillus to at least isoniazid and rifampicin. The World Health Organization (WHO) recommends the adoption of the Directly Observed Treatment Short-Course strategy (DOTS) [8] in order to avoid MDR-TB. Although treatments default reduces by DOTS[8], other studies did not support it.[9]

Factors identified to be associated with treatment default are: lack of knowledge about the disease, distance from the health post, partial or complete regression of symptoms in the first two months of treatment, the side effects associated with the medication, male gender, age, the use of toxic substances and hospitalization during treatment, pre-existing pulmonary disease, previous default, TB/HIV co-infection , absence of supervised treatment and poor quality of patient care at the Health Unit and poor interventional strategy to control the disease.[10-14]

MATERIALS AND METHODS

This study was carried out at department of medicine SKBZ/AKCMH Muzaffaraabad .All adults with clinical diagnosis of TB, based on history, clinical examination and laboratory investigations were admitted to hospital. The data was obtained on standardized forms and entered in SPSS 20. TB defaulters were patients who interrupted treatment for two consecutive months or more as defined by WHO.[15] Variables studied were: age, sex, treatment performed, type of treatment, clinical form, sputum smear microscopy, diabetes, other co-morbidities. The association of potential risk factors with defaulting was initially studied .The ethical committee approved the study.

RESULTS

The table shows the frequency of total of 110 TB patients who were enrolled in the study. From the total study population 74.6% (82/110) were males and

25.4% (28/110) were females. The mean age of the study population was 44.94 ± 21.37 (Mean± SD).

Risk factors for default: Results of assessment on risk factors associated to default from TB treatment are shown in table.

Age and Gender: The statistical analysis of males showed a greater risk of default as compared to females and this difference was also statistically significant. The Analysis also revealed that the age has the significant association with TB treatment default in adults.

Living (distance, route closed, displacement) and treatment: There was statistically significant association between treatment defaults receiving treatment in a health unit related to patient's location away in rural area, displacement and also when routes closed in winter (table).

Clinical forms: Treatment default according to clinical form (types of TB) of the patient were observed with pulmonary 86(78.2%), pleural 5(4.5%), abdominal 5(4.5%), lumphadenopathy 6(5.5%), TBM 3(2.7%) skin TB 3(2.7%),disseminated TB 1(0.9%) and bone TB 1(0.9%) cases. This difference was statistically non significant.

Improvement to treatment: There was significant association between improvement to treatment and TB treatment default.

Associated Conditions related factors: Associated (Co-infection) with diabetes mellitus and corticosteroids showed no statistically significant risk for defaults ($p<0.296$).

Type of treatment entrance numbers of default: There was no significant association between Numbers of default and TB treatment default.

Influence of duration of treatment: Duration of treatment in weeks and treatments default in relative had no significant association with treatment default. Treatment default in months ($p=0.05$) has statistical significant for TB treatment default.

Table No.1: Risk factors for TB treatment default

Main reasons for default	Total	Percentage	P-Value
N (%)	**110**		
Age (mean ± SD)	44.94 ± 21.37		.007
Male	82	74.6	.522
Female	28	25.4	.323
Distance	12	10.9	.007
Displacement	6	5.5	.024
Financial Constraint	5	4.5	.001
Nobody at home to bring medicine or take patient to hospital	10	9.1	.001
Route closed in winters	18	16.4	.009*
Side effect for drugs	26	23.6	.005*
Improvement	31	28.2	.009*
Went abroad	2	1.8	.001*
Type of TB first time	110	100.0	.910*
Contact of relation			.534*
Duration of treatment default (weeks)	9.33 ± 6.65		.445*
Duration of treatment default (months)	19.34 ± 32.97		.05*
Associated condition	15	13.7	.296
Default relative TB	40	36.3	.663
Reporting back	40	36.3	.05
Default No,	110	100.0	.872
Condition of arrival			.041
Mortality	10	9.0	.765

*PLUM-Ordinal Regression; Chi-Square

DISCUSSION

High treatment default rate and low cure rates are most significant factors for the maintenance of disease transmission, the development of multiple drug resistance (MDR-TB) and high mortality.[16]These factors are observed as an increase in the number of cases of primary and acquired multidrug resistance. Patients with TB are predominantly urban. The large territory of the Muzaffaraabad AK with thick population favors the transmission of the disease. The distant periphery makes it difficult to control TB because traveling from far away and road mostly closed during winters season makes difficult treatment follow-up. Therefore, understanding the factors leading to

treatment default is of extreme importance to plan effective strategies for TB treatment control programs.

Living in the city appeared to be associated with non compliance. TB patients groups having DOT'S coverage was higher in city than in the remote district .Our results were similar to those for previous study with respect to sex which was identified as a risk factors. Study in India showed sex as well as noncompliance as a risk factor for treatment default. Our study has shown similar result.[17]We observed that the adults 44.94 ± 21.37 (Mean± SD) years of age were at risk of abandoning treatment. Our study showed that treatment default occurred mainly in this age group due to poor socioeconomic conditions. TB/HIV co infected / disseminated TB patients that tend to develop-infection were not evaluated for treatment default in our study. TB accelerates the evolution of HIV infection to AIDS by decreasing the patients survival.[18]Alcoholism has been identified as risk factor for treatment default worldwide and along with anti tuberculosis drugs increases the risk of liver damage[19]but not evaluated by us per se. Diabetic patients had no increased risk of noncompliance although it is associated with older age which also lowered the risk of treatment default.[20] Studies have shown prior noncompliance was because of poor information of TB patient about the disease and treatment. The poor quality of TB service, large population, sub-optimal implementation of public health facilities, inadequate knowledge, insufficient explanation on disease were also important risk factors for low adherence to treatment.

The statistically significant similarity of the results obtained with and without DOT in Asia, raises many issues related to quality and cost benefits of anti TB programs. The uniform strategy should be investigated to deal with this issue. A good relationship between patient and health professional can improve treatment adherence. There are several factors related to health care that may negatively affect adherence. They include negative attitudes of health professionals, lack of credibility and negative attitude of the patient in relation to services, lack of proper medicines and poor access to health services.[21]The association of factors related to the health system studied above, predictors of abandonment should be considered when planning the TB control activities. Others significant factors associated with treatment default are poor education, the occurrence of default in the previous treatment, TB/HIV co-infection, alcoholism and other co-morbidities. Patients who have these conditions should be considered as targets for individualized attention and priority by health professionals, with emphasis on conducting DOTS.

The limitation of the our study was non evaluation of TB/HIV co-infection, alcoholism, negative attitudes of health professionals and patient, sub-optimal implementation of public health facilities and other co-morbidities.

CONCLUSION

Factors identified to be associated with treatment default were; male gender, distance from the health post, displacement, financial Constraints, no body at home to bring medicine or take patients to hospital, route closed in winters, improvement from symptoms and went abroad. These factors should be considered in addressing health care policy against tuberculosis in TB control programming. Ensuring these patients should receive DOTS under strict provision. Information about the disease and treatments should be available both to healthcare provider as well as patients in order to promote adherence to treatment and avoid the spread of MDR-TB.

REFERENCES

1. WHO (World Health Organization) (2011) Global Tuberculosis Control. Switzerland, Geneva.
2. Community profile: Pakistan; global tuberculosis control. WHO report 2003: 99-101.
3. Vijay S, Balansangameswara VH, Jagannatha PS, Saroja VN, Kumar P. Default among tuberculosis patients treated under DOTS in Banglore city: a search for solution. Ind J Tuberc 2003;49:185-95.
4. Jaggaraajamma K, Sudha G, Chandrasekaran V, NirupaC, Thomas A, Santha T, et al. Non-compliance among patients treated under revised national tuberculosis control programme (RNTCP) Tiruvallurz District, South India. Ind J Tuberc 2007; 54: 130-5.
5. Pablos-Mendez A, Knirsch CA, Barr RG, Lerner BH, Frieden TR. Nonadherence in tuberculosis treatment: predictors and consequences in New York City. Am J Med 1997;102: 164–170.
6. Squire SB, Belaye AK, Kashoti A, Salaniponi FML, Mundy CJF, Theobald S, et al. Lost smear positive pulmonary tuberculosis cases: where are they and why did we lose them. Int J Tuberc Lung Dis 2005;9:25-31.
7. Kliiman K, Altraja A. Predictors and mortality associated with treatment default in pulmonary tuberculosis. Int J Tuberc Lung Dis 2010;14: 454–463.
8. WHO (World Health Organization). The Stop TB Strategy, Building on and enhancing DOTS to meet the TB-related Millennium Development Goals. Switzerland, Geneva 2006.
9. Ferreira V, Brito C, Portela M, Escosteguy C, Lima S. DOTS in primary care units in the city of Rio de Janeiro, Southeastern Brazil. Rev Saúde Pública 2011;45:40–48.
10. Volmink J, Garner P. Directly observed therapy for treating tuberculosis. Cochrane Database Syst Rev CD 003343, 2007.

11. Ayisi JG, van't Hoog AH, Agaya JA, Mchembere W, Nyamthimba PO, et al. Care seeking and attitudes towards treatment compliance by newly enrolled tuberculosis patients in the district treatment programme in rural western Kenya: a qualitative study. BMC Public Health 2011;11: 515.
12. Dooley KE, Lahlou O, Ghali I, Knudsen J, Elmessaoudi MD, et al. Risk factors for tuberculosis treatment failure, default, or relapse and outcomes of retreatment in Morocco. BMC Public Health 2011;11:140.
13. Muture BN, Keraka MN, Kimuu PK, Kabiru EW, Ombeka VO, et al. Factors associated with default from treatment among tuberculosis patients in nairobi province, Kenya: a case control study. BMC Public Health 2011;11: 696.
14. Mesfin MM, Newell JN, Walley JD, Gessessew A, Tesfaye T, et al. Quality of tuberculosis care and its association with patient adherence to treatment in eight Ethiopian districts. Health Policy Plan 2009;24:457–466.
15. Buu TN, Lonnroth K, Quy HT. Initial defaulting in thenational tuberculosis programme in Ho Chi Minh City,Vietnam: a survey of the extent, reasons and alternativeaction taken following default. Int J Tuberc Lung Dis 2003;7:735-41.
16. Gelmanova IY, Keshavjee S, Golubchikova VT, BerezinaVI, Strelis AK, Yanova GV, at el. Barriers to successful tuberculosis treatment in Tomsk, Russain Federation: nonadherence,default and the acquisition of multidrugresistance. Bull World Health Organ 2007;85:703-11.
17. Balasubramanian R, Garg R, Santha T, Gopi PG,Subramani R, Chandarasekaran V, et al. Gender disparities in tuberculosis: report from rural DOTS programme insouth India. Int J Tuberc Lung Dis 2004; 8: 323-32.
18. Kassim S, Sassam-Morokro M, Akhan A, Abouya LY, Digbeu H, et al. Two-year follow-up of persons with HIV-1 and HIV-2-associated pulmonary tuberculosis treated with short-course in West Africa. AIDS 1995;9:1185–1191.
19. Mitchison DA. How drug resistance emerges as a result of poor compliance during short course chemotherapy for tuberculosis. Int J Tuberc Lung Dis 1998;2:10–15.
20. Singla R, Khan N, Al-Sharif N, Ai-Sayegh MO, Shaikh MA, et al. Influence of diabetes on manifestations and treatment outcome of pulmonary TB patients. Int J Tuberc Lung Dis 2006;10: 74–79.
21. Mittal C, Gupta S. Noncompliance to DOTS: How it can be decreased. Indian J Community Med 2011;36: 27–30.

Address for Corresponding Author:
Dr. Javed Akhter Rathore,
Assistant Professor of Medicine,
AJK Medical College Muzaffarabad A.K Consultant Physician & Head of Department of Medicine& Supervisor FCPS Part-II Trainee Medicine-
Combined Military Hospital/Sheik Khalifa Bin Zyad Hospital Muzaffarabad, A.K
Cell+92-355-8106847
Email: drjavedrathore111@yahoo.com