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A LONGITUDINAL STUDY TO KNOW RISK FACTORS RELATED WITH TREATMENT FAILURE IN PATIENTS OF PULMONARY TUBERCULOSIS WITH POSITIVE SMEAR AND THEIR TREATMENT OUTCOME

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Abstract:

Objective: *Tuberculosis is one of the major infectious diseases and deaths worldwide. The aim of this study is to evaluate the treatment outcomes of new cases of pulmonary tuberculosis with positive smears and risk factors for treatment failure.*

Study Design: *A longitudinal study design.*

Place and Duration: *In the Pulmonology Department of Mayo Hospital, Lahore for three-years duration from 2013-2016.*

Methodology: *A checklist of research variables for data collection was applied. 500 patients with positive pulmonary tuberculosis were included in the study. The data were analyzed using a classical statistical test and logistic regression to adjust the effect of variables.*

Findings: *The mean age of the patients was 49.73 ± 21.57. 57.5% of the patients were male and 57.4% were urban residents. The outcome of treatment for these patients was as follows: treatment success was 87.8%, treatment 2.6%, death 4.4%, failure 2% and 3.1%. In multivariate regression analysis, at the end of the second month of treatment, self-administered therapy and positive sputum patients were considered to be important determinants of failed treatment.*

Conclusion: *According to the targets set by the World Tuberculosis Organization, it is desirable to evaluate the treatment outcome of patients with tuberculosis of patients with pulmonary tuberculosis (treating at least 85% of new pulmonary tuberculosis sputum smear). positive). The application of direct observation therapy increases treatment success in all patients, especially in patients at low risk of treatment failure.*

Key words: *Tuberculosis, treatment success, treatment failure.*

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INTRODUCTION:

Tuberculosis (TB) is considered one of the leading causes of disease and death worldwide, especially in low- and middle-income countries. Despite the widespread availability of inexpensive and effective treatments, tuberculosis is a serious disease and death with nine million new cases annually and two million deaths. According to the Millennium Development Goals, the morbidity and mortality of this disease should decrease by 50% by 2015 compared to 1990 and should be lifted until 2050; However, despite the fact that in many industrialized countries, despite good treatment facilities and safe supply of medicines free of illness, the outcome of treatment has not reached the patient-specified targets. The World Health Organization (WHO) reports worldwide success rates for TB treatment from 20 to 87%. A variety of factors, such as the doctor's diagnosis of TB, treatment and awareness of the DOTS strategy, are related to the success of the treatment. The key to controlling tuberculosis is to detect the disease as soon as possible and ensure that the people diagnosed are able to complete the treatment and recover. However, treatment is a challenge for both patients and providers because it requires taking more than one drug for at least 6 months, often resulting in irregular or no medication. The recurrence of TB causes major threats such as MDR-TB. In addition, HIV-related very rarely resistant tuberculosis and tuberculosis can be considered as problems caused by inadequate treatment of tuberculosis. For this reason, the monitoring of treatment outcome is a central part of surveillance that must be successful in removing tuberculosis. Recognition factors affecting the failed treatment of TB patients are of great importance for improving the treatment strategy. Our aim was to examine the results of the response to pulmonary tuberculosis treatment with positive spread and to identify the factors associated with treatment without success.

MATERIALS AND METHODS:

This longitudinal study was held in the Pulmonology Department of Mayo Hospital, Lahore for three year duration From 2013-2016. A total of 500 patients were selected for study purpose. Data collection checklist included data such as treatment, gender, age, place of residence, sputum smear status, nationality, treatment category, and TB treatment at the beginning of treatment and at the beginning of treatment. Under DOTS. All patients with Smear-positive TB were included and reported to the TB Control Department of the Disease Control Department. All patients with positive sputum smear at the beginning of treatment were followed up to the end of treatment. Positive sputum smear tests were performed using the Ziehl-Nielsen technique for tuberculosis cases. Patients with extra-pulmonary TB and diffuse TB were excluded from the study. Treatment regimens and procedures, including laboratory diagnosis, were guided by the national tuberculosis control policy; All tuberculosis cases were subjected to a treatment regimen of 6 or 8 months according to the WHO protocol. Sputum specimens were taken at the end of the second month and at the beginning of the fifth month. Patients with a positive smear after the second month spent an additional month in the four drug regimens. Patients with positive smear at the beginning of the fifth month were considered as treatment failure. The result of treatment was divided into seven categories according to the WHO guidelines; some changes: cure rate, treatment outcome, successful treatment (cure rate and treatment outcome), death, suspension taken, treatment failure failure (a patient who does not return full chemotherapy). We use SPSS 16 for data analysis. Chi-square test was used to assess differences in categorical variables and Fisher's exact test was used when cell size was <5 (for univariate results).

RESULTS:

In the study group, the incidence of TB and pulmonary tuberculosis in the population was 9.1 and 4.3 per 100, respectively. In males and females, the overall tuberculosis incidence was 51.5% and 48.5%, respectively. (P = 0.0001, OR = 1.62, 95% CI = 1.3-2.01); these figures were 54.6% and 45.4% for pulmonary TB cases (P = 0.0001, OR = 1.1.95% CI = 1.1-1.2); The frequency of smear positive pulmonary TB cases in males and females was 48.1% and 51.9% respectively (P = 0.003, OR = 0.87.95% CI = 0.79-0.95). 500 patients with positive pulmonary TB were diagnosed and the mean age was 49.73 ± 21.57; There was no statistically significant difference between the sexes according to the mean age of the patients (P = 0.8). 57.4% of the cases were living in urban areas and 93.3% of the diagnosed cases belonged to the new disease case. 50.5% of the patients were treated with DOTS (Direct Observation Therapy, Short Course).

Disease case	New	-	-	-	88.2	11.8	1.1	0.3
	Old	0.7	1.2	0.5-2.9	83	17		
Dots Strategy	Yes	-	-	-	92	8	12.3	0.0001
	No	0.02	1.9	1.1-3.2	83.2	16.8		
Age group	16>	-	-	-	100	0	9.5	0.09
	16-30	0.999	-	-	88	12		
	31-45	0.999	-	-	84	16		
	46-60	0.999	-	-	94.1	5.9		
	61-75	0.999	-	-	88.5	11.5		
	75<	0.999	-	-	82.7	17.3		

The results of treatment were 87.8% successful treatment, 2.6% nonconformity, 2% treatment failure, 4.4% death and 3.1% transfer. The rate of treatment success in women was higher than in men; However, incompatibility, failure, death, and transfer were more common in men. According to chi-square results, the effect of gender on treatment outcome was significant (P = 0.01); However, according to the multiple regression test, gender was not a predictor of treatment outcome (OR = 1.2, 95% CI = 0.4-1.06, P = 0.08). Treatment success in rural areas was found to be higher than in urban areas (OR = 0.8, 95% CI = 0.5-1.3, P = 0.4) and the success rate of new patients was higher than that of the depicted patients. ; However, the observed difference was not significant (OR = 1.2, 95% CI = 0.5-2.9, P = 0.7). The success rate of treatment in patients was significantly higher in patients who usew medicines regularly (OR = 4.2, 95% CI = 1.6-10.8, P = 0.003) and DOTS (OR = 1.9).

Positive level of sputum smear at the beginning of treatment	Basil 1-9	-	-	-	77.8	22.3	3.6	0.3
	1^+	0.2	0.5	0.2-1.5	89.8	10.2		
	2^+	0.4	0.6	0.2-1.9	87.2	12.8		
	3^+	0.2	0.5	0.2-1.5	87.3	12.7		
Results of sputum smear at the end of second month of treatment	Negative	-	-	-	91	9	54.6	0.0001
	Basil 1-9	0.0001	6.6	2.3-19.01	52.9	47.1		
	1^+	0.01	2.6	1.2-5.5	75.9	24.1		
	2^+	0.02	4.3	1.2-15.2	71.4	28.6		
	3^+	0.0001	16.9	3.6-79.3	37.5	62.5		

According to self-administered treatment, 95% CI = 1.1-3.2, P = 0.02). Successful treatment was below 85% in the age group of 31-45 years and over 75 years (see Table 1).

DISCUSSION:

In patients with pulmonary tuberculosis, treatment success with positive smear was 87.8% and success rate was 12.8%. In another Iran study, the negative response rate to TB treatment was 35.5%. In a study conducted in Finland, 441 patients were successfully treated (70.1%), 108 patients died (17.2%), and 80 patients were "treatment failure, incompatibility and transplantation" (23%). For all new cases in the European Union and withdrawal cases of pulmonary tuberculosis in 2007, success rates were 73.8% and 79.5%, respectively. Factors related to tuberculosis results in the southern part of Ethiopia were determined; 74.8% in the successfully treated group and 16.7% in the poor treatment group; 60.9% of this group was incompatible, 36.9% in death group and 2.2% in failure group. This suggests that the treatment status of tuberculosis patients is more attractive than the studies indicated. Interpretation of the desired treatment outcome, as well as better outcomes for patients with tuberculosis, is based on direct sputum smear tests in health laboratories and treatment of patients with smear-positive pulmonary TB, and Network therapy. In this way, if the tools are not available, the personnel performing the tests are not as competent as they are and if there is not enough time to examine the slides, false negative reports for smear results will increase. In the future, the possibility of recurrence of the disease will be expected. The majority of smear-positive TB patients are being asked to identify the fact that they are diagnosed by laboratories without health network laboratories, the accuracy of the second month's tests and the end of treatment. In this study, treatment outcomes in women were more desirable than in men, and the probability of unsuccessful treatment in men was 1.7 times higher than in women. However, there was no significant statistical relationship between gender and the outcome of treatment in another Iranian study, but in a study conducted in southern Ethiopia, gender was one of the factors related to the undesirable outcome of the study. treatment. The same conclusions were found in Finland and it was observed that gender (masculine) was considered among the risk factors contributing to unsuccessful treatment. Smoking and HIV / AIDS in males were higher than females, and both were considered significant risk factors for mortality in TB patients. The likelihood of unsuccessful treatment of patients with self-administered treatment was 1.9-fold higher ($p = 0.02$) than those with direct observed care (DOTS). In a study of 149 patients who received direct treatment and 223 patients who received self-administered treatment, the results of treatment of directly observed patients were more desirable ($P < 0.002$). In another study in Turkey, the success rate for DOTS all patients, especially artırmıştır30 the proportion of treatment failure risk factors. In a study of the effectiveness of the DOTS strategy in the recovery or failure of pulmonary TB therapy, the failure rate in the DOTS group was 1.7%, while in the control group it was 7.3%.

CONCLUSION:

The main purpose of the TB control program is to reduce the TB diseases that significantly reduce the mortality and morbidity of the disease and then reduce the prevalence of diseases in the community so that this disease is no longer a health problem in the community. TB can be eradicated. However, an increase in HIV / AIDS, side effects of anti-tuberculosis medications, and an increase in MDR TB in this region pose a serious threat to the TB program, and if these conditions are ignored and no decision is made, It will appear. . For this reason, it is essential to examine the structure of the workforce, to support and strengthen the DOTS strategy, to pay attention to the motivation issues of the personnel involved in the program, and to establish an effective relationship with the physicians of the private sector.

REFERENCES:

1. Atif, Muhammad, Zainab Anwar, Razia Kaneez Fatima, Iram Malik, Saima Asghar, and Shane Scahill. "Analysis of tuberculosis treatment outcomes among pulmonary tuberculosis patients in Bahawalpur, Pakistan." *BMC research notes* 11, no. 1 (2018): 370.
2. Thai, Phan Vuong Khac, Dang Thi Minh Ha, Nguyen Thi Hanh, Jeremy Day, Sarah Dunstan, Nguyen Thi Quynh Nhu, Vo Sy Kiet et al. "Bacterial risk factors for treatment failure and relapse among patients with isoniazid resistant tuberculosis." *BMC infectious diseases* 18, no. 1 (2018): 112.
3. Taye, Girum, Atkure Defar, Tefera Taddele, Abebe Bekele, Theodros Getachew, Habtamu Teklie, Geremew Gonfa, Misrak Getnet, Mengistu Tadesse, and Minilik Demissie. "Treatment Outcome and Associated Factors among TB Patients in Ethiopia: Hospital-Based Retrospective Study." *American Journal of Epidemiology* 6, no. 1 (2018): 14-19.
4. Reddy, K.P., Horsburgh, C.R., Wood, R., Fields, N.F., Girouard, M.P., Hou, T., Yu, L., Freedberg, K.A. and Walensky, R.P., 2018. Non-Inferiority Complex? Cost-Effectiveness of Shortened Regimens for Tuberculosis Treatment in People with HIV. In *A25. TUBERCULOSIS MANAGEMENT: NEW INSIGHTS* (pp. A1150-A1150). American Thoracic Society.
5. Davids, M., Pooran, A.S., Pietersen, E.,

Wainwright, H.C., Binder, A., Warren, R. and Dheda, K., 2018. Regulatory T Cells Subvert Mycobacterial Containment in Patients Failing Extensively Drug-resistant TB Treatment. *American journal of respiratory and critical care medicine*, (ja).

6. Tanvejsilp, Pimwara, Mark Loeb, Jonathan Dushoff, and Feng Xie. "Healthcare resource uses and out-of-pocket expenses associated with pulmonary TB treatment in Thailand." *PharmacoEconomics-open* 2, no. 3 (2018): 297-308.
7. Chabala, Chishala, Anna Turkova, Margaret J. Thomason, Eric Wobudeya, Syed Hissar, Vidya Mave, Marieke Van Der Zalm et al. "Shorter treatment for minimal tuberculosis (TB) in children (SHINE): a study protocol for a randomised controlled trial." *Trials* 19, no. 1 (2018): 237.
8. Panda, G., Behera, D., Meher, B.K., Mohanty, T., Sethy, H.K., Pattnaik, M.R. and Patra, J.K., 2018. CLINICO-RADIOLOGICAL PRESENTATION OF PULMONARY TUBERCULOSIS IN HIV POSITIVE PATIENTS IN A TERTIARY CARE HOSPITAL OF EASTERN INDIA. *PARIPEX-INDIAN JOURNAL OF RESEARCH*, *6*(11).
9. Barry, Simone E., Magda Ellis, YuRong Yang, Guangyu Guan, Xiaolin Wang, Warwick J. Britton, and Bernadette M. Saunders. "Identification of a plasma microRNA profile in untreated pulmonary tuberculosis patients that is modulated by anti-mycobacterial therapy." *Journal of Infection* (2018).
10. Mwangi, Brian Kedode, George Ayodo, Sammy Khagayi, Laura Tengo, Moseti Makori, and Linnet Munyasia. "Factors Associated with Default from TB Treatment Among Tuberculosis Patients in BUSIA Country." *IJASSH* (2018).
11. Kizilbash, Quratulain, Adriana Vasquez, and Barbara Seaworth. "Strategies for Successful Treatment of Active Tuberculosis in the Setting of DRESS on RIPE." In *Open forum infectious diseases*, vol. 5, no. 4, p. ofy062. US: Oxford University Press, 2018.
12. Sakajiki, Muhammad Aminu, Bilkisullah Garba, Yusuf Ibrahim, Billo Alhaji Mohammed, Umar Abdullahi, Kabir Billo Sada, and Tukur Mafara Ibrahim. "Treatment outcome of Tuberculosis at a specialist hospital in North Western Nigeria-A 30 months retrospective study." *Pakistan Journal of Chest Medicine* 24, no. 1 (2018): 04-09.
13. Asres, Abyot, Degu Jerene, and Wakgari Deressa. "Delays to treatment initiation is associated with tuberculosis treatment outcomes among patients on directly observed treatment short course in Southwest Ethiopia: a follow-up study." *BMC pulmonary medicine* 18, no. 1 (2018): 64.
14. Sharma, Surendra Kumar, Alladi Mohan, Achintya Dinesh Singh, Hridesh Mishra, Sonali Jhanjee, Ravindra Mohan Pandey, Binit Kumar Singh et al. "Impact of nicotine replacement therapy as an adjunct to anti-tuberculosis treatment and behaviour change counselling in newly diagnosed pulmonary tuberculosis patients: an open-label, randomised controlled trial." *Scientific reports* 8, no. 1 (2018): 8828.
15. Telele, Nigus Fikrie, Amare Worku Kalu, Gaetano Marrone, Solomon Gebre-Selassie, Daniel Fekade, Belete Tegbaru, and Anders Sönnerborg. "Baseline predictors of antiretroviral treatment failure and lost to follow up in a multicenter countrywide HIV-1 cohort study in Ethiopia." *PloS one* 13, no. 7 (2018): e0200505.