Epidemiological study of multi drug resistant tuberculosis at tertiary care hospital

Dipak Onkar Patil[1*], Sanjay Dattu Mahajan[2]

[1,2]Associate Professor, Department of TB and Chest, Dr Ulhas Patil Medical College and Hospital, Jalgaon, Maharashtra, INDIA.
Email: drdopatil@gmail.com

Abstract
Introduction: Multidrug-resistant tuberculosis (MDR-TB) has emerged as a significant global health concern. There are alarming reports of increasing drug resistance from various parts of the globe which potentially threaten to disrupt the gains achieved in tuberculosis (TB) control over the last decade. MDR-TB is essentially man-made phenomenon and arises due to inadequate treatment of drug-sensitive TB. **Aims and Objectives**: To study the Epidemiological factors associated with Multi Drug Resistant Tuberculosis at Tertiary Care Hospital. **Methodology:** This is a cross-sectional, hospital based study of the patients admitted to TB inpatient department of a tertiary health Centre during March 2013 to March 2014, one year period, All the patients who has taken treatment Under DOT Centre of the health Centre after being suspect of the MDR TB, their sputum samples were send for Culture and drug sensitivity to State laboratories; at there these patients were confirmed as MDR TB Patients. All these MDR patients were studied and interviewed for the necessary data collection. At our tertiary health Centre; 80 TB patients were confirmed as MDR Patients included into the study. **Result**: The most common age for MDR TB patients in our study observed to be of 51-60 (23.75%) ; followed by 31-40 (16.25); 41-50 (15.00%); 61-70 (13.75%); 21-30 (11.25%); 11-20 (8.75%); >70 (6.25%) <10 (5.00%). Proportions of Males 70.00% were more than Female 30.00%. Most common associated condition with The MDR –TB patients were; (61.25%) MDR patients were Low Socioeconomic Status followed by H/O Alcohol addictions H/O (40%) Smoking (35%) Category of TB treatment: Defaulter (33.75%); Treatment failure (27.5%); Relapse (23.75%); New–case (17.5%). Irregular treatment (16.25%) Immuno-compromised Status (15%). Malnourished (BMI<18) (10%). **Conclusion:** In our study the most common conditions associated with the MDR–TB were Low Socioeconomic Status followed by H/O Alcohol addictions H/O; Smoking; Category of TB treatment: Defaulter; Treatment failure; Relapse; New–case; Irregular treatment; Immuno-compromised Status; Malnourished (BMI<18) so all these conditions should noted for the prevention of drug resistance in future.
Keyword: MDR-TB, DOTs Centre, Defaulter, Treatment failure, Relapse, New–case.

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INTRODUCTION

Multidrug-resistant tuberculosis (MDR-TB) has emerged as a significant global health concern[1,2]. There are alarming reports of increasing drug resistance from various parts of the globe which potentially threaten to disrupt the gains achieved in tuberculosis (TB) control over the last decade[3]. MDR-TB is essentially man-made phenomenon and arises due to inadequate treatment of drug-sensitive TB[4]. The prevalence of MDR-TB mirrors the functional state and efficacy of tuberculosis control programmes in the country. Previous treatment for TB is the strongest risk factor for development of MDR-TB[5] Drug resistance is a major threat to tuberculosis (TB) control programs worldwide[6]. Multidrug resistant TB (MDR-TB) is defined as a simultaneous resistance to at least rifampicin (RMP) and isoniazid (INH).[7] Patients infected with MDR strains are less likely to be cured from TB particularly if they are co-infected with HIV or suffer from other immuno suppressive diseases[8]. MDR-TB is associated with a two to four fold period of treatment, psychological problems, economic wastage, poor treatment adherence and consequently treatment

failure[9,10,11]. It is also associated with higher case fatality rates (50-80%) as a result of drug toxicity[9], Globally, 3.5% of new TB cases and 20.5% of previously treated cases are estimated to have MDR-TB[12]. In developing countries, due to poverty, migration and HIV infection, MDR-TB is associated with spread and persistence in high incidence[9,10,11]. Despite the lack of comprehensive surveillance data from Africa, MDR-TB has been recognized as an emerging public health concern. Drug resistant TB is estimated as 1.6% and 12% among new and previously treated TB cases, respectively[12]. In South Africa, clusters of MDR-TB cases have been documented in institutional and community settings among HIV-infected patients.[13]

AIMS AND OBJECTIVES

To study the Epidemiological factors associated with Multi Drug Resistant Tuberculosis at Tertiary Care Hospital.

MATERIAL AND METHODS

This is a cross-sectional, hospital based study of the patients admitted to TB inpatient department of a tertiary health Centre during March 2013 to March 2014, one year period, All the patients who has taken treatment Under DOT Centre of the health Centre after being suspect of the MDR TB, their sputum samples were send for Culture and drug sensitivity to State laboratoriesat there; these patients were confirmed as MDR TB Patients. All these MDR patients were retrospectively studied and interviewed for the necessary data collection. At our tertiary health Centre; 80 TB patients were confirmed as MDR Patients.

RESULTS

Table 1: Age wise Distribution of the MDR TB Patients

Age group	No. (%)	Percentage
<10	4	5.00%
11-20	7	8.75%
21-30	9	11.25%
31-40	13	16.25%
41-50	12	15.00%
51-60	19	23.75%
61-70	11	13.75%
>70	5	6.25%
Total	**80**	**100%**

The most common age for MDR TB patients in our study observed to be of 51-60 (23.75%); followed by 31-40 (16.25); 41-50 (15.00%); 61-70 (13.75%); 21-30 (11.25%); 11-20 (8.75%); >70 (6.25%) <10 (5.00%).

Table 2: Sex wise Distribution of MDR TB patients

Sex	No.	Percentage
Male	56	70.00%
Female	24	30.00%
Total	**80**	**100.00%**

Proportions of Males 70.00% were more than Female 30.00%.

Table 3: Distribution of the MDR TB patients as per the Associated Condition

Associatedcondition	No.	Percentage
Low Socioeconomic Status	49	61.25%
H/O Alcohol addictions	32	40%
H/O Smoking	28	35%
Category of TB treatment:		
a) Defaulter	27	33.75%
b) Treatment failure	22	27.5%
c) Relapse	19	23.75%
d) New –case	14	17.5%
Irregular treatment	13	16.25%
Immuno-compromisedstatus	12	15%
Malnourished (BMI<18)	8	10%

More than one associated condition per person. Most common associated condition with The MDR–TB patients were; (61.25%) MDR patients were Low Socioeconomic Status followed by H/O Alcohol addictions H/O (40%) Smoking (35%) Category of TB treatment: Defaulter (33.75%); Treatment failure (27.5%); Relapse (23.75%); New–case (17.5%). Irregular treatment (16.25%) Immuno-compromised Status(15%). Malnourished (BMI<18) (10%).

DISCUSSION

Factors such as inadequate chemotherapy, poor drug quality, poor adherence to treatment, treatment failure, prior treatment, cavity pulmonary TB, HIV infection and diabetes accounted for the development of drug resistance in TB[14,15]. Of these, the most powerful predictor for the presence of MDR-TB is a previous history of treatment of TB[14]. Many new cases of MDR-TB develop due to error in TB management such as the use of a single drug to treat TB, the addition of a single drug to a failing regimen, the failure to identify pre-existing resistance, the initiation of an inadequate regimen using first line anti-TB drugs[14,15]. Variations in bioavailability of anti-TB drugs predispose the patient to the development of MDR-TB[14,15.] In our study we have found that The most common age for MDR TB patients in our study observed to be of 51-60 (23.75%); followed by 31-40 (16.25); 41-50 (15.00%); 61-70 (13.75%); 21-30 (11.25%); 11-20 (8.75%); >70 (6.25%) <10 (5.00%). Proportions of Males 70.00% were more than Female 30.00%. Most common associated condition with The MDR–TB patients were;

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