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Tuberculosis

Clinical Profile of MDR Tuberculosis Patients Attending Tertiary Care Centre, S.N Medical College, Agra

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Abstract: Emergence of drug resistant tuberculosis, particularly multi drug resistant TB (MDR-TB) and extensively drug resistant TB (XDR-TB) has become an obstacle to effective TB control in India. The study aims to find out the sociodemographic and clinical profile of MDR-TB patients in DR-TB Centre, Agra. It was a Retrospective Study carried out from March 2016 to March 2017. Out of 234 admitted cases, majority (48.00%) were between 18-50 years. Males were predominant (58.12%). Most patients (61.96%) were underweight (BMI<18.5kg/m2). Among the patients, HIV seropositivity and MDR-TB was found in 8.97% each. A very high default rate was present (20.51%) and a cure rate of 43.59%. The commonest associated co morbidity was Diabetes Mellitus (20.94%). Most patients had moderately extensive (52.99%) lesions in chest x-ray. Relapse of previous antituberculosis treatment was found to be major contributor of MDR-TB suspect as 96.58% had taken ATT previously. Early diagnosis of drug resistance, quality DOTS services and rational use of anti-TB drugs can prevent emerging of MDR-TB as a major public health problem. Adequate dose, adequate duration and Adequate Regimen are the key to success in the treatment of Tuberculosis and prevention of drug Resistance.

Keywords: MDR TB (Multi drug Tuberculosis), DR-TB Centre, Treatment Failure.

INTRODUCTION

Drug-resistant tuberculosis (DR-TB) has become a significant public health problem in number of countries and one of the major obstacles in effective tuberculosis control programme. Emergence of drug resistant tuberculosis (TB), particularly multi drug resistant tuberculosis (MDR-TB) has been an area of growing concern and is posing a threat to global efforts of TB control. In 2016, there were an estimated 600 000 new cases of MDR-TB worldwide, and approximately 240 000 deaths from MDR-TB with most cases and deaths occurred in Asia [1]. Programmatic management of drug-resistant TB (PMDT) is being implemented in India in a phased manner since 2006. Latest Surveillance shows that 4.1% of new and 19% of previously treated TB cases in the world is estimated to have rifampicin or multidrug-resistant tuberculosis (MDR/RR-TB). India is one of the high tuberculosis burden countries in the worldaccounting for nearly 27% of the global incidence. According to the latest World Health Organization (WHO) global tuberculosis report released in 2016, India has surpassed China in harboring MDR-TB cases and there were 1,47,000 cases of MDR-TB from India in 2016[1]. An estimated 2.2% (95% CI: 1.9-2.6) of new cases and 15% (95% CI: 11-19) of retreatment cases in India have MDR-TB [1]. Mismanagement of MDR-TB with erratic use of second-line drugs may lead to development of XDR-TB. Globally, 6.2% of all MDR cases are XDR-TB[1] with Ramachandran etal reporting 3.2% of XDR strains among the MDR isolates in a field study from Gujarat [2]The HIV-TB co-infection aptly described as the cursed duet [3] with WHO estimated6.6% HIV prevalence in incident TB cases in India in 2016 while 13% prevalence was reported worldwide [1]. Patients with HIV-TB co-infection frequently have advanced HIV disease and are at an increased risk of death and new opportunistic infections.

In this study we present data regarding the sociodemographic and baseline clinical characteristics of MDR-TB patients of DR-TB Centre Agra who were put on Conventional MDR treatment regimen from March 2016 to March 2017.

MATERIALS & METHODS

All confirmed DR-TB cases which were diagnosed at RNTCP certified Intermediate Reference Laboratory (IRL), STDC Agra, India with either Line Probe Assay (LPA) or Xpert MTB/RIF assay also called as genexpert. These are WHO recommended standard, rapid diagnostic tests for diagnosis of DR-TB

Setting

The study was conducted in TB & Chest department, S. N. Medical College, Agra.

Study Design

A hospital based, descriptive, cross-sectional study

Study Period

The study was carried out from March 2016 to March, 2017.

Study Sample

All MDR TB patients registered during the period of study irrespective of sex, religion, caste, socio-economicstatus, educational qualification and Co Morbid conditions attended Department of TB & chest, S. N. Medical College, Agra Contributed to the study Sample. The study sample size was 234.

Data collection

Data on various parameters of the patient's demographic, socioeconomic, clinical presentation, radiology, previous treatment history and results of drug sensitivity testing were recorded from the PMDT treatment register, PMDT treatment card and clinical information booklet.

REGIMEN

Intensive Phase (6-9 Months) - kanamycin, levofloxacin, ethionamide, pyrazinamide, ethambutol and cycloserine

Continuation phase (18 months)-Ethambutol, levofloxacin, ethionamide and cycloserine on daily basis. All data of MDR-TB cases were collected from pretreatment evaluation records.

Definition of treatment outcome of MDR-TB patients according to WHO 2013 guidelines [4] are-

- Cured: Patient, who has completed MDR-TB treatment, is culture-negative in the last month of treatment and has been culture-negative during the preceding 11 months of treatment.
- Treatment completed: patient who completed MDR-TB treatment but did not meet the definition for cure or failure due to lack of bacteriologic results.
- Treatment failure: defined as more than one positive culture in the last 12 months of treatment, with a minimum of five been made to terminate treatment early.
- Death: defined as patient who dies for any reason during the course of MDR-TB treatment.
- Treatment default: defined as patient whose MDR-TB treatment was interrupted for two or more consecutive months.

Chest radiographs was obtained for every patient and classified according to the National Tuberculosis Association of USA (1961) [5].

- Minimal: Non-cavitatory lesions involving one or both lungs but the volume of involvement regardless of distribution less than or equal to one zone.
- Moderately advanced: More advanced lesions than minimal but the total involvement not more than the volume of one lung. Cavities, if present, not to exceed a total diameter (of all cavities) of 4 cm.
- Far advanced(Extensive) (III): Any lesion more advanced than moderate

STATISTICAL ANALYSIS

For demographic and DST data, frequencies, percentages, means and ranges were calculated as appropriate.

OBSERVATIONS

Table-1: Clinical Profile of MDR TB Patients

Parameters	Clinical Characteristics	Number	Percentage
AGE	Less than 18 Years	68	27.3
	18-50 Ears	114	48.00
	50 Years	52	22.2
SEX	Male	136	58.12
	Female	98	41.89
RESIDENCE	Urban	123	52.56
	Rural	111	47.43
ADDICTION	Smoking	75	32.05
	Alcohol	63	26.92
	Tobacco Chewing	96	41.03
SITE OF DISEASE	Pulmonary	212	90.60
	Extra Pulmonary	22	9.40
Previous ATT Intake	Present	226	96.58
	Absent	08	3.42
HIV Status	Negative	213	91.02
	Positive	21	8.97
Co Morbidities	Diabetes	49	20.94
	COPD	32	13.67
	Others	16	6.83

Table-2: Clinical Profile of MDR Patients

Parameters	Characteristics	Number	Percentage
Nutrition	Malnourished	145	61.96
	Normal	89	38.04
Radiological changes	Mild Disease	38	16.23
	Moderate Disease	124	52.99
	Severe Disease	72	30.7

Table-3: Clinical Profile of MDR TB Patients

Parameters	Characteristics	Number	Percentage
Presenting Symptoms	Cough with Expectoration	104	44.44
	Fever	58	24.78
	Shortness of Breath	42	17.94
	Haemoptysis	30	12.82
	Chest Pain	18	7.69
Treatment Outcome	Cured	102	43.59
	Completed	22	9.40
	Died	15	6.41
	Defaulted	60	25.64
	Failure	35	14.96

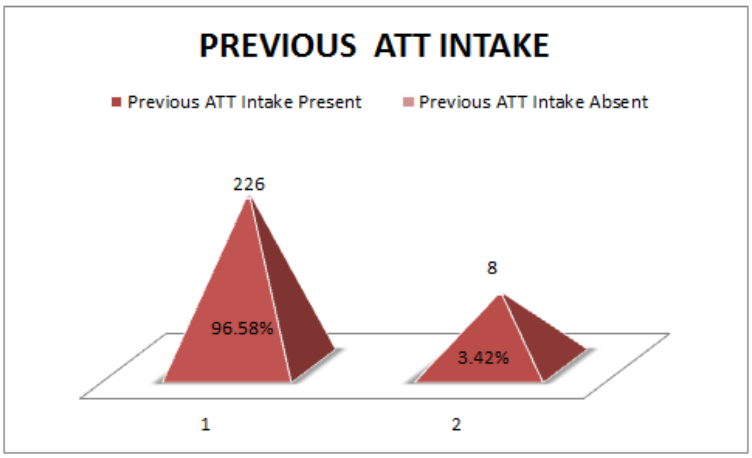

Fig-1: Previous ATT Intake among MDR TB pts

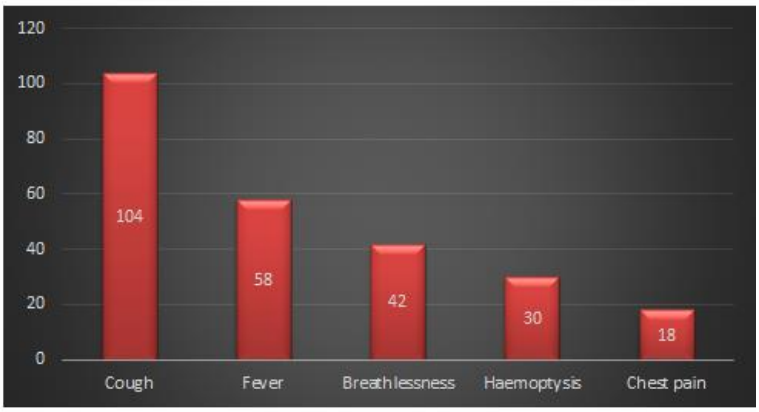

Fig-2: SYMPTOMS OF MDR TB PATIENTS

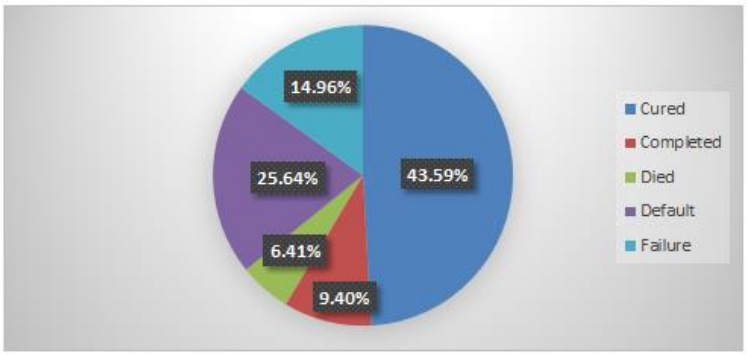

Fig-3: Treatment outcome among MDR Patients

DISCUSSION

Treatment of MDR-TB often poses serious challenge to patients and majority of such patients are usually referred to tertiary care. These patients are already resistant to most of the first line drug and require judicious and optimal combinations of second line drugs. In thepresent study majority of the MDR-TB cases (48%) were in the younger age group (18-50 years); mean age was 33.52 years. In a retrospective study done in a TB unit in Mumbai, Dholakia and Shah noted that majority of the cases (67.6%) were in the age group 15-35 years with a mean age of 31years [6]. Udwadia and Moharil, Sharma *et al.* also reported prevalence of younger age group among MDR-TB patients with the mean age of their study groups being 29.7 years and 33.25 years respectively [7,8]. Majority of our cases were male (58.12%).Male predominance among MDR-TB cases has been also reported by other authors [9,10].· our patients were a heavily pre-treated group of MDR-TB patients of which majority belonged to relapse, reinfection and default cases with(84.62%) had previous antituberculosis treatment. A recent meta-analysis also showed that relapse rate is high (almost 10%) in India and the risk factors for relapse included poor drug compliance, initial drug resistance, smoking, and alcoholism [11]. However, in

a prospective study conducted by Sethi *et al*. in North India, major proportion of MDR-TB cases was due to treatment failure [12]. The mean BMI of the patients in this study was 18.4 kg/m2, 61.96% were undernourished. Malnutrition among MDR-TB cases was also reported from another study (mean BMI of 17.84 kg/m2) done in a tertiary care setting in New Delhi [9]. The commonest comorbidity among our study group (20.94%) was Diabetes followed by COPD (13.67%). A further 6.83% cases were on chronic steroid therapy. Diabetes was present as a comorbid illness among 7.6% in a study carried out by Datta *et al*. And also found COPD to be the commonest comorbid disease among MDR-TB cases in a tertiary care hospital of Kashmir [9]. Globally, MDR-TB has been a particular concern among HIV-infected persons, whose rate of survival is substantially lower than that of those not infected, and testing for HIV is recommended for all TB patients [3,13,14]. Very little data is available regarding HIV in MDR-TB in India with Datta et al.reporting 1.9% HIV seropositivity among MDR -TB cases [9]. However in the present study 8.97% MDR-TB patients found to be HIV seropositive. Majority of patients in our study had pulmonary TB (90.60%), while 2.5% patients had both PTB and EPTB and 9.4% had only EPTB. Similar findings have been reported by others [6]. Radiologically our patients had more moderate (52.99%) to severely extensive disease (30.7%), usually bilateral (84.3%). This has also been reported by some other Indian observers [6, 7].

Higher treatment success rate was observed in patients of urban area, this may be due to better facility of transportation and more awareness of disease. Similarly better treatment success rate was observed in patients with moderately advanced disease. A successful outcome was seen in 52.56% patients in our study which is comparable to the results seen previously in some studies [15-18]. However, this figure is relatively in comparison to cure rates of about 60% observed in Denver, New York and Netherlands and higher than study done by Dhingra *et al*. [19] and lower than 80% seen in Turkey, Peru and Netherlands [17,18,20]. In our study patients those defaulted, most of them had migrated out of area. Holding patients to a defined geographical area for two years was difficult. In failure patients, delayed development of bacteriological resistance was the probable cause. These patients later were shifted on individualized regimen. The cure rate was 43.59% which is significantly less to a similar study recently published reports from New Delhi [21] where cure rates of 61 per cent and an another study by Prasad *et al*. [22] showed 58.97% cure rate. A similar study from Peru showed 48% favorable response using a standardized regimen which is comparable to our study [23].

CONCLUSION

The present study showed that younger age group particularly the males were more affected with MDR-TB. Undernutrition was quite prevalent among the MDR-TB patients. Relapse of previous antituberculosis treatment was found to be the major contributor of MDR-TB in DR-TB Centre, Agra. Overall the findings of this study outline the importance of studying the sociodemographic factors and to strengthen the national programs. Early detection of drug resistance especially among relapse and failure patients, ensuring Quality DOTS Services and patient counseling and rational use of ATT will go on a long way to prevent the emergence of MDR TB as a major health problem.

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Conflict of interest: None declared

Limitation of the study

Owing to the small sample size and the study being conducted in a single tertiary centre, the results of the study cannot be generalized for the entire population. Further large scale studies are required.

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