ORIGINAL RESEARCH PAPER

Volume-7 | Issue-6 | June-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

TO ASSESS MULTIDRUG RESISTANT TUBERCULOSIS (MDR-TB) AND ITS TREATMENT OUTCOMES IN A TERTIARY HOSPITAL IN PUNJAB, INDIA

General Medicine

Ripudaman Singh* *Corresponding Author

Mannat Kaur Bhatia

Akashdeep Singh

Dr.Vishal Chopra

ABSTRACT

BACKGROUND - The advent of MDR TB threatens to de-stabilize the Tuberculosis control programmes all over the globe.
MATERIALS AND METHODS- It was a retrospective cohort study. Microsoft Excel 2007 was used to analyze medical records.
RESULTS–Out of 113 patients under study, 68 (60.17%) patients were successfully treated (cured 50 [44.24%] + treatment completed 18 [15.92%]). 22(19.46%) patients died, 10 (8.84%) failed, 10 (8.84%) defaulted and 2 (1.76%) were transferred out to other sites. For the rest, treatment was discontinued or 1(0.88%) was shifted to XDR. 41 (36.28%) converted their sputum culture to negative ("initial favorable response") after the intensive phase of therapy.
CONCLUSION– The successful treatment rate is still low though higher than the WHO reported data of MDR-TB 2014 onwards. MDR-TB is a challenge which must be undertaken by judicious use of appropriate drugs, supervised individualized treatment and follow-up which constitute the key factors for successful management of these patients.

KEYWORDS

Multidrug-resistant Tuberculosis, World Health Organization, Mycobacterium, Treatment outcome

AIMS AND OBJECTIVES -
To assess magnitude, treatment outcomes and patterns of MDR TB in a year in Punjab, India and to evaluate the optimal number of consecutive sputum cultures after culture conversion for decisions on respiratory isolation of MDR-TB patients and microbiological assessment.

INTRODUCTION

Tuberculosis that doesn't respond to at least Isoniazid and rifampicin-two most powerful Anti-TB drugs is known as Multidrug Resistance Tuberculosis (MDR-TB). With the rising trouble of drug resistant mycobacterium in the Indian subcontinent, India accounts for 25% of the global MDR TB burden. In the year 2015 itself, 12.4% of TB cases in India were reported to be multidrug resistant. Drug resistance survey in various states has indicated that the prevalence of MDR- Tb is 2.3% amongst new cases and 12-17% among the re-infection cases [1]. Globally in 2016 the World Health Organization (WHO) estimated that 4.1% of new cases and 19% of previously treated cases of TB were of MDR/RR-TB.

Tuberculosis is classified as Pulmonary Tuberculosis when it is bacteriologically confirmed or clinically diagnosed case of Tuberculosis involving parenchyma or trachea-bronchial tree. This along with Extra Pulmonary Tuberculosis continues to take millions of lives despite the highly sponsored schemes present in present scenario. A Tuberculosis case is bacteriologically confirmed when a specimen comes out to be positive with smear microscopy, culture or WHO approved rapid diagnostics (Xpert MTB/RIF).

On the basis of history of previous TB treatment, a patient is classified as a 'New' case if no previous drug treatment has been taken or treatment was taken for less than a month. Treatment if previously taken by the patient for more than 1 month leads to he/she being classified as 'Previously treated'. Failure and Relapse cases both have an important figure which continues to reflect significantly in various reported literature. If a patient fails to follow up after initiating the treatment he/she is labeled as a 'Defaulted' case. Indian Government has launched Revised National TB control programme (RNTCP) which has an overall goal of providing universal access in quality diagnosis and treatment for all TB patients with an intermediate goal of successfully treating at least 90% of all new cases and 85% of all previously treated patients. Culture and drug susceptibility tests are widely done for treating the menace better. The age group 15-54 is most commonly affected in India with 2/3rd of these patients being male [2]. The advent of MDR TB threatens to de-stabilize the Tb control programmes all over the globe and which is why working on this was a must.

METHODS AND MATERIAL

Study design and setting

It was a retrospective cohort study conducted at a tertiary care hospital in Punjab. All confirmed MDR-TB patients who were consecutively enrolled for treatment between January 2014 and December 2014 at the study site were included in the study. This hospital garners MDR-TB patients from the 8 southern districts of Punjab. All the patients were initially started on a standardized treatment regimen. Sputum smear and culture were obtained at the time of enrolment, and then monthly during the intensive and continuous phase of TB treatment. All patients were tested at baseline for HIV as well.

Data collection and analysis

Data was collected from the record register and the medical records of the patients were assessed in terms of patient demographic characters like age, gender and region. Clinical parameters of drug susceptibility testing (DST) and culture tests were appropriately considered. Microsoft Excel 2007 was used to capture and statistically analyze patients with confirmed MDR-TB. The data was presented in the form of figures and percentages.

RESULTS

Out of the total 143 patients, 113 were included in the study after excluding patients that were not found to be resistant to both Isoniazid and Rifampicin (exclusion criteria). 39 were found to be female (34.5%) and 74 (65.4%) males with male to female ratio being 74:39, clearly indicating higher incidence of MDR-TB among males.

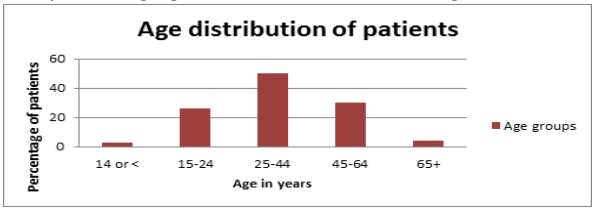

Fig:1- Graph depicting age distribution of the study sample

The age distribution of patients with TB is given in Fig 1. Multi-resistant tuberculosis was found to be more prevalent in the age group 25-44 years of age.

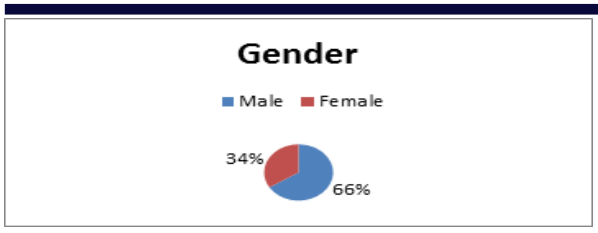

Fig 2: Pie chart depicting distribution according to gender

Extra pulmonary cases accounted for a meagre 1.76 % of the total number of MDR-TB cases studied. Among the 113 patients, 41 (36.28%) converted their sputum culture to negative ("initial favourable response") while 8 (7.07%) had failed to convert to negative ("microbiological failure "). The rest 23 (20.35%) of the sputum cultures were reported to have undergone contamination and for the others data was not available. The cumulative number remaining sputum culture positive following initial reconversion was noted at 3 months in 9 (7.9%) patients, while at 4, 5, 6-11 months it was found in 6 (5.3%),2 (1.76%) and 11 (9.7%) patients respectively.

Between the period of January 2014 to December 2014, 143 patients treated with CAT I or CAT II Anti-Tubercular treatment were found resistant, being either in treatment, failure, defaulted or relapse category by using appropriate drug susceptibility tests (LPA, CBNAAT and GeneXpert) .37 patients in CAT I and 76 patients in CAT II of treatment were confirmed to be MDR-TB on C-DST. Amongst the CAT I cases, 15 were relapse, 8 were failure, 2 were defaulters and 12 were new cases. Similarly amongst the CAT II cases of MDR-TB, 44 were relapse, 18 were failure, 5 were defaulters and 9 were new cases.

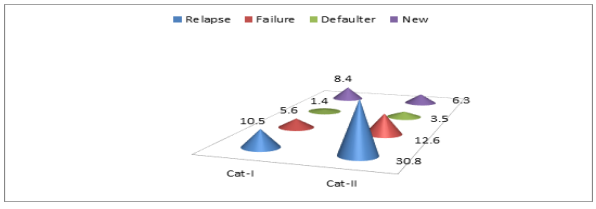

Fig 3: Distribution of patients into different categories on CAT-I and CAT-II treatment

Overall 68 (60.17%) patients out of 113 MDR-TB cases were successfully treated (cured 50 [44.24%] + treatment completed 18 [15.92%]). 22(19.46%) patients died, 10 (8.84%) failed, 10 (8.84%) defaulted and 2 (1.76%) were transferred out to other sites. For the rest, treatment was discontinued or 1(0.88%) was shifted to XDR. Only 3 cases of HIV associated comorbidity were noted amongst these

CATEGORY	Cured	TC	Defaulted	Failure	Died	TO	Switched to XDR
CAT-I	14	9	4	3	6	0	1
CAT-II	30	15	6	7	16	2	0

Table 1: Distribution of patients according to their treatment outcome

DISCUSSION

Treatment of MDR-TB is complex due to the prolonged regimens, expensive drugs, high incidence of drug toxicities, untimely detection of MDR-TB cases etc. This further contributes to poor treatment adherence especially in India, where MDR-TB has been persistently identified despite the successful implementation of RNTCP II. MDR-TB is associated with increased risk of death during treatment. The reasons for MDR-TB mortality were low socio-economic factors, lesser education, increased number of previous tuberculosis cases, etc. [3]. Thus, it is imperative that we study MDR-TB cases since there has been a significant rise in Punjab, especially in the 8 southern districts according to the recent reports.

The mean age of patients in this study was 25-44 years which is generally less than the age group commonly reported in other studies [4]. Majority of the cases were male similar to what has been documented in other studies. The overall rate of treatment success was 60.17%%, which is slightly higher than but mostly consistent with the previously reported rates. The treatment outcome success was found to be higher than the total WHO data for treatment outcome success from the year 2014 onwards. However, the rate is still short considering the intricacy of situation, efforts behind the treatment and the rising number of cases. This low rate poses a serious threat for national MDR-TB program and control efforts as patients may develop additional resistance and transmit drug resistant forms to others. In this study only 2 patients had current or previous concomitant disease like HIV.

The proportion of smear-positive patients with sputum smear non-conversion at the end of the intensive phase which don't lead to the 'Initial favorable response' are also an indicator of TB performance program.

LIMITATION

Analysis was based on data collection from patients' records; therefore potential risk factors which were not found in them couldn't be assessed and a small sample size is another limitation. Had the study been larger the potential differences between the patients with successful outcomes and those with unsuccessful outcomes might have been more apparent.

CONCLUSION

In conclusion, MDR-TB is a challenge which must be undertaken by judicious use of appropriate drugs, supervised individualized treatment and follow-up which constitute the key factors for successful management of these patients. In certain areas currently available approaches may not be adequate and other innovative approaches like DOTS plus may need to be implemented.

REFERENCES

1. Sachdeva Singh Kuldeep, Kumar Ashok, Dewan Puneet, Kumar Ajay, Satyanarayana, et al. New Vision for Revised National Tuberculosis Control Programme (RNTCP): Universal access - "Reaching the un-reached".Indian J Med Res. 2012 May; 135(5): 690–694.
2. Rao Sukhesh, Tuberculosis and patient gender: An analysis and its implications in tuberculosis control. 2009 Apr-Jun; 26(2): 46–47.
3. Sharma SK, Turaga KK, Balamurugan A, Saha PK, Pandey RM, et al. Clinical and genetic risk factors for the development of multi-drug resistant tuberculosis in non-HIV infected patients at a tertiary care center in India: a case-control study. Infect Genet Evol. 2003; 3:183–188. PubMed]
4. S. Shringarpure Kalpita, Isaakidis Petros, D. Sagili Karuna, Baxi R.L et.al. Loss-To-Follow-Up on Multidrug Resistant Tuberculosis Treatment in Gujarat, India: The WHEN and WHO of It. PLoS 5One. 2015; 10(7):