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PREVALENCE OF MULTIDRUG – RESISTANT TUBERCULOSIS AMONG PULMONARY TUBERCULOSIS PATIENTS

PULMONARY MEDICINE

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ABSTRACT

BACKGROUND : MDR – TB has emerged as a significant global health problem in recent time. The most important risk factor for the development of MDR-TB is previous irregular and inadequate anti-tuberculosis therapy. Category I pulmonary TB includes those patients who had never taken anti – tuberculosis therapy or had taken anti-tuberculosis therapy for less than one month duration. Category II pulmonary TB includes those patients who had failed previous TB treatment, relapsed after treatment, or defaulted from previous treatment. We will do this study to find out the prevalence of MDR – TB among pulmonary TB patients.

AIMS AND OBJECTIVES : 1. To study the prevalence of multidrug – resistant tuberculosis among pulmonary tuberculosis patients. 2. To study the prevalence of multidrug – resistant tuberculosis among category I pulmonary tuberculosis patients. 3. To study the prevalence of multidrug – resistant tuberculosis among category II pulmonary tuberculosis patients.

MATERIAL AND METHOD : This study was done on pulmonary TB patients diagnosed in NMCH, Jamuhar between June 2017 and December 2018. All pulmonary TB cases will be subjected to mycobacterial culture and drug-susceptibility testing (DST). MDR – TB will be defined as TB caused by TB bacilli having resistance to both isoniazid and refampicin.

CONCLUSION : The prevalence of MDR – TB among pulmonary TB patients in our study came to be 9.73%. The prevalence of MDR – TB among category I pulmonary TB patients in our study came to be 2.73%. The prevalence of MDR – TB among category II pulmonary TB patients in our study came to be 12.32%

KEYWORDS

Multidrug – resistant tuberculosis, pulmonary TB, prevalence.

INTRODUCTION

Multidrug – resistant tuberculosis (MDR-TB) Multidrug-resistant tuberculosis (MDR-TB) has been now a days emerging as a significant health problem worlw-wide in recent time[1,2]. There are various reports of increasing drug resistance which is going to nullify the result achieved in tuberculosis (TB) control over the last decade [3] by Governments programmes and efforts of different private bodies. MDR-TB is essentially a man-made problem which occurs due to inadequate treatment of drug- sensitive TB[4]. The prevalence of MDR-TB usually a mirror image of the quality of tuberculosis control programmes in the society. Previous inadequate treatment for TB is the risk factor for development of MDR-TB [5].

Category I pulmonary TB includes patients who had never been on anti-tuberculosis drugs or had been on anti-tuberculosis drugs for less than one month duration. Category II pulmonary TB includes patients who had failed in anti-tuberculosis drugs treatment, relapsed after anti-tuberculosis drugs treatment or defaulted during previous anti-tuberculosis drugs treatment[6]. As these patients have taken anti-tuberculosis drugs in past, they are at risk for developing multi-drug resistant strains of Tuberculosis bacilli.

Treatment of MDR-TB patients is very-very difficult. Complication rate is high and success rate is low in MDR-TB as compared to category I and category II pulmonary TB patients [7,8,9]. In India, in MDR-TB patients only 46% have been documented to have successful! treatment in 2015 (vs 48% in 2014) with about 20% of death and 20% left treatment before prescribed time [10,11]. Further, poor outcome of extensively drug-resistant TB (XDR-TB; MDR-TB with at least one fluoroquinolone and injectable aminoglycoside resistant) has been documented in 9.5% patients with MDR-TB in 2015 [8]. Therefore, it is important to know the prevalence of MDR-TB among pulmonary TB patients. The present study was done to find out the prevalence of MDR-TB among pulmonary TB patients from patients attending NMCH Jamuhar.

AIMS AND OBJECTIVES

1. To study the prevalence of multidrug - resistant tuberculosis among pulmonary tuberculosis patients.
2. To study the prevalence of multidrug-resistant tuberculosis among category I pulmonary tuberculosis patients.
3. To study the prevalence of multidrug-resistant tuberculosis among category II pulmonary tuberculosis patients.

MATERIALS AND METHODS

Study duration - June 2017 to December 2018.

Inclusion criteria - Cases of pulmonary tuberculosis of age 10-70yr attending NMCH Jamuhar.

Exclusion criteria-

1. Presence of secondary immunodeficiency states like HIV, organ transplantation, diabetes mellitus and malignancy .
2. Hepatitis B or C co-infection; (Patients having cardiac disease
3. Extra-pulmonary TB

DATA COLLECTION

A written informed consent was taken from each patient for inclusion in the study. A detailed clinical history and previous treatment history for anti-tuberculosis therapy were taken from every Patients. All patients were subjected to sputum- smear microscopy for acid-fast bacillus (AFB) and chest radiography at the time of enrolment in for the study. After diagnosis of pulmonary TB sputum specimens of each patient enrolled in study were sent for mycobacterial culture .The positive cultures were evaluated for drug susceptibility testing .

RESULTS -

After collection of data for our study analysis was done to evaluate the MDR-TB prevalence which is shown in table below

Table 1- Baseline characteristics of 678 pulmonary TB patients

AGE (years)mean ± SD (range)	32.15 ±9.02
MALE	356
FEMALE	495
Body mass index (kg/m2)mean ± SD (range)	19.23 ±4.09
CAT- 1	183
CAT-11	495

Patients who completed our study were mostly past treated cases. Mean age of patients of our study was 32.15(in years). Mean body mass index of patients of our study was 19.23 (kg/m2).

Category	Total	Male	Female	MDR	Prevalence
Cat 1	183	97	86	3+2=5	2.73%
Cat 2	495	259	236	32+29=61	12.32%
Total	678	356	322	35+31=66	9.73%
MDR	66	35	31	66	9.73%

MDR-TB prevalence of pulmonary TB patients in our study is 9.73%

DISCUSSION

The aim of our study was to investigate the prevalence of MDR-TB among pulmonary TB patients . Total 706 patients enrolled in our study out of which 28 patients could not complete the study so they were excluded from study. Remaining 678 patients completed the study. Out of 356 cases were male (category 1-97 and category 11-259) and 322 (category 1-86 and category 11-236) cases were female. 183 patients belongs to category I and 495 patients belongs to category II. On analysis of data total 66 (male-35 and female-31) patients came to be MDR-TB (category 1-5 and category 11-61) . The prevalence of MDR-TB among category I pulmonary TB patients in our study came to be 2.73%. The prevalence of MDR-TB among category II pulmonary TB patients in our study came to be 12.32%. Prevalence of MDR-TB among pulmonary TB patients in our study came to be 9.73%. This was similar to MDR-TB rates published in different previous studies[12r19]. Different studies done over past decades have shown MDR-TB rates between 14-49% among category II pulmonary patients. The World Health Organization fourth Global Project showed a MDR-TB prevalence of 17.2 per cent among old TB patients in India[3].

Our results got importance because there are less data on the prevalence of MDR- TB among TB patients in the recent past. As drug-resistance is a ever changing phenomenon, it is necessary to monitor drug-resistance time and time again.

Our study have certain limitations. First, this is a medical college-based study and so there may be referral bias involved in patient selection. Second, the patients in this study were from a single medical college. Third, exclusion criteria were applied to enroll patients in our study, which may not be always similar in real-life.

CONCLUSION

The prevalence of MDR-TB among pulmonary TB patients in our study came to be 9.73%. The prevalence of MDR-TB among category I pulmonary TB patients in our study came to be 2.73%. The prevalence of MDR-TB among category II pulmonary TB patients in our study came to be 12.32%.

REFERENCE-

1) Dye C. Global epidemiology of tuberculosis. Lancet 2006; 367 : 938-40.
2) Corbett EL, Watt CJ, Walker N, Maher D, Williams B,. Raviglione MC, et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. Arch Intern Med 2003; 163 : 1009-21.
3) World Health Organization. Anti-tuberculosis drug resistance in the world; Report no. 4; Geneva, Switzerland. WHO/HTM/TB/2008.394. Avai\ab\efrom:http://whqlibdoc. who.int/hq/2 008/WHO_HTM_TB_2008.394_ eng. pdf, accessed on April 5, 2010.
4) Sharma SK, Mohan A. Multidrug-resistant tuberculosis - a.menace that threatens to destabilize tuberculosis control. Chest 2006; 130 ; 261-72.
5) Faustini A, Hall A, Perucci C. Risk factors for multi-drug resistant tuberculosis in Europe: a systematic review. Thorax 2006; 61 : 158-63.
6) Chauhan L.S, Agarwal S.P.The revised national tuberculosis control programme. In: Agarwal S.P, Chauhan L.S,editors.Tuberculosis control in India. New Delhi: Elsevier; 2005. p.23-34.
7) Wallis RS, Maeurer M,MwabaP, Chakaya J, Rustomjee R, Migliori GB, etal. Tuberculosis –advances in development of new drugs, treatment regimens, host directed therapies, and biomarkers. Lances infect Dis. 2016; 16(4) :e 34-36.
8) World health organization. The Global Tuberculosis Report : 2016. Geneva, Switzerland WHO, 2016 http://www.who.int/tb/publications /global _report/en.Accessed 2017, Feb 9.
9) Ahuja SD, Ashkin D, Avendano M, Baerjee R, Bauer M, Bayona JN, et al. Multidrug resistant pulmonary tuberculosis treatment regimens and patient outcomes: an individual patient data meta-analysis of 9,153 patients. PLoS Med. 2012;9(8):e1001300.
10) Central TB Division. TB India 2016. RNTCP Annual Status Report. New Delhi : Ministry of Health and Family Welfare; 2016. http://www.tbcindia.nic.in/index1. php?lang = 1& level = 1 & subkind = 4160 & lid = 2807. Accessed 9 Feb.2017.
11) Central TB Division. TB India 2015. RNTCP Annual Status Report. New Delhi:Ministry of Health and Family Welfare; 2015. http://www.tbcindia.nic.in/index1. php?lang=1&level=1&sublinkid=4160&lid=2807. Accessed 18 Feb 2016.
12) Trivedi SS, Desai SC. Primary antituberculosis drug resistance and acquired rifampicin resistance in Gujarat, India. Tubercle 1988; 69 : 37-42
13) Jain NK, Chopra KK, Prasad G. Initial and acquired isoniazid and rifampicin resistance to Mycobacterium tuberculosis and its implication for treatment. Indian J Tuberc 1992; 39 : 121-4.
14) Janmeja AK, Raj B. Acquired drug resistance in tuberculosis in Haryana, India. J Assoc Physicians India 1998; 46 : 194-8.
15) Vasanthakumari R, Jagannath K. Multidrug resistant tuberculosis - A Tamil Nadu study. Lung India 1997; 15 : 178-80.
16) Dam T, Isa M, Bose M. Drug sensitivity profile of Mycobacterium tuberculosis isolates - a retrospective study from a chest disease institute in India. J Med Microbiol 2005; 54 : 269- 71.
17) Vijay S, Bala Sangameshwara VH, Jagannatha PS, Kumar P. Initial drug resistance among tuberculosis patients under DOTS Programme in Bangalore City. Indian J Tuberc 2004; 51 17-21.
18) Shah AR, Agarwal SK, Shah KV. Study of drug resistance in previously treated tuberculosis patients in Gujarat, India. Int J Tuberc Lung Dis 2002; 6 : 1098-101
19) Hanif M, Malik S, Dhingra VK. Acquired drug resistance pattern in tuberculosis cases at the State Tuberculosis Centre, Delhi, India. Int J Tuberc Lung Dis 2009; 13 : 74-8.