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RESEARCH ARTICLE

INCIDENCE OF MULTI-DRUG RESISTANCE TUBERCULOSIS IN NORTH COASTAL ANDHRA PRADESH

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ABSTRACT

The worldwide emergence of multidrug-resistant tuberculosis (MDR-TB) is a man-made global problem causing a major threat to tuberculosis (TB) control. MDR-TB is now encountered in India with increasing frequency, with reports from many parts of the country. This study was designed to evaluate the incidence of MDR-TB in Government Hospital for Chest and Communicable Diseases, Visakhapatnam, A.P, India, from July2012 –Dec 2012. This study included 33 inpatients of the hospital. All patients were resistant to at least Rifampicin and Isoniazid (INH). Patients' files were analyzed for clinical and epidemiological data, causes and types of drug resistance. Patients were interviewed with standard questionnaire to determine their history of anti-TB drug therapy and were classified accordingly. Total reported MDR-TB cases were 33 inpatients, 27 males and 6 females.12% are below 25yrs, 33% are between 26-35yrs,12%are between 36-45 yrs.' and 42% are above 46yrs of age.12% are only alcoholic,12% are only smokers,45%are both alcoholic and smokers,30%are non-alcoholic and non-smokers. The above study shows that the risk of the disease is more in male individuals who are above 45yrs of age and who are habituated with smoking and alcoholism. Very few cases with family history were identified. MDR-TB is more liable to occur among retreatment patients. Acquired resistance is more common due to lack of adherence to treatment or inappropriate treatment. Cure was high in all age categories while death was significantly higher in older patients.

INTRODUCTION

According to WHO 3.7% of Tuberculosis (TB) patients in the world have Multi-drug Resistance strains (MDR-TB). It is about 20% in those previously treated. The frequency of occurance of MDR-TB varies substantially between countries. About 9% of MDR-TB also have resistance to two other classes of drugs or extensively drug resistant TB (XDR-TB). WHO estimates that there were about 0.5 million new MDR-TB cases in the world in 2011. About 60% of these cases occurred in Brazil, China, India, The Russian Federation and South Africa. When TB bacteria (Mycobacterium tuberculosis) cannot be killed by atleast the best two antibiotics Isoniazid (INH) and Rifampicin (RIF) which are commonly used to cure TB, then it is said to be a form of drug-resistant TB. This form of tuberculosis is difficult to be treated and requires upto 2 years of multidrug treatment. 'WHO' pointed out that identification of Rifampicin resistance is possible only after testing for susceptibility of the organism in a culture. TB is a medical, social and economic disaster of immense magnitude that is occurring over the world. Strains of M.tuberculosis resistant to both (INH) and (RIF) with or without resistance to other drugs have been termed MDR strains. INH and RIF are keystone drugs in the management of TB. The recommended duration of treatment is guided by smear and culture results. The minimum recommended duration should be atleast 18 months after culture conversion. Extension to 24 months treatment may be indicated in patients with chronic extensive pulmonary damage. One of the major concern about second-line anti-TB drugs is their potential to cause adverse effects. The experience of MDR-TB treatment pilot projects has contributed to higher knowledge about these adverse reactions in various population. The treatment of MDR-TB is a challenge which should be undertaken by experience clinicians at centers equipped with reliable laboratory service for Mycobacterium tuberculosis culture and invitro sensitivity testing.

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MATERIALS AND METHODS

Study population: the study population consisted of 33 MDR-TB patients confirmed by the physicians of hospital for Chest and Communicable diseases, Visakhapatnam. Informed consent was taken from all the individuals participating in the study. Information related to name, age, sex, ethnic origin and family history was collected from the patients. This work was carried out during the period July 2012 to Dec 2012. The patients files have been analysed for the following Data.

Epidemiological data of patients

Age, sex, occupation, residence, special habits, married or unmarried, caste, dietary habits.

Causes of drug resistance

Irregular drug intake due to unavailability of certain drugs, poor adherence of treatment. Type of resistant patients, defaulters, treatment failure, relapse newcases.

RESULTS

The number of MDR-TB inpatients in Hospital for Chest and Communicable Diseases during the period of July 2012 to Dec 2012 are 33.

Table 1. **Demographic and Socio-economic characters of MDR-TB cases**

		Character		Total number	Percentage
Gender		Male		27	81.81%
		Female		6	18.18%
		Male	Female		
Age	<25yrs	3	1	4	12.12%
	26yrs-35yrs	9	2	11	33.33%
	36yrs-45yrs	4	0	4	12.12%
	<45yrs	11	3	14	42.42%
Alchoholic(A)		4	0	4	12.12%
Smoker(S)		3	1	4	12.12%
A+S		14	1	15	45.45%
NA+NS		6	4	10	30.30%
Family History				4	12.12%

Table 2. Prevalence of MDR-TB age wise

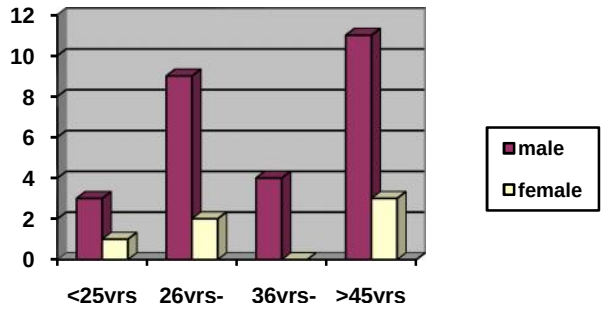
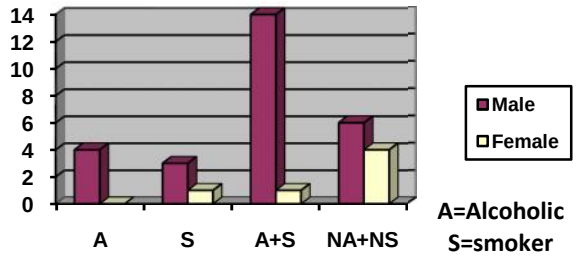


Table 3. Prevalence of MDR-TB in alcoholic and smoker indivduals



During the period of this study the number of inpatient MDR-TB cases reported in the hospital were 33. Out of the 33 cases, 27 (81.81%) were males and 6(18.18%) were females. Among these MDR-TB cases 4 (12.12%) were only alcoholics, 4(12.12%) were only smokers,15(45.45%) were both alcoholics and smokers, while 10 (30.30%) were neither alcoholic nor smokers. As regard to age 4(12.12%) were below 25years, 11(33.33%) were between 26 to 35years,4(12.12%) were between 36-45years and 14 (42.42%) were above 45 years of age. As expected all cases were resistant to atleast INH or Rifampicin. There was a significant association between resistance and older age as 42.42% of cases occurred in >45 years of age group as shown in table 1 and 2.people who were habituated to both smoking and alcoholism (45.45%) are more prone to be affected.

DISCUSSION

The spread of MDR-TB can be prevented by quick identification of these cases and providing treatment with a combination of effective drugs. In this study the mean age was 36.5 representing the period of physical, mental and occupation stress. The majority of MDR-TB cases in the present study were males 27(81.81%) while females represented 6(18.18%). Similar results were reported by other studies. The most frequent habits were smoking and alcoholism 12.12% mentioned in the above study, there was no significant effect of only smoking or only alcoholism, but there was a significant oucome of MDR-TB on Individuals who are habituated to both alcoholism and smoking. This data confirms the previous studies.

Conclusion

MDR-TB is more likely to occur among patients undergoing retreatment, which reflects the lack of adherence to treatment, inappropriate treatment or lack of follow-up and observation of TB cases. We need more units for management of MDR-TB to serve the effected people. Male individuals are more effected than female individuals who are above 45years of age and who are habituated to both alcoholism and smoking.

Future prospective: Molecular study in regard with association of NRAMP1 gene polymorphism would be done by genotyping using isolated DNA from individuals who are affected with MDR-TB.

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