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Original Article

Prevalence of Rifampicin Resistance in Extra-Pulmonary Tuberculosis in Tertiary Care Hospital

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ABSTRACT

Background: Drug resistant tuberculosis (DR TB) is a global problem. Extrapulmonary (EP) DR TB poses a diagnostic, therapeutic challenge. We aimed to study their clinical profile and drug resistance outcomes under the programmatic setting. **Material & Methods**: This retrospective study included the database of consecutive EPDR TB cases enrolled at the DR TB center from Jan 2024 to June 2024. The demographic, clinical details, drug resistance Statistical analysis was done using percentages and mean. **Result**: A total of 269 tuberculosis positive patients were analyzed out of which was 34% were diagnosed with EPTB. Among them,54% were female and 45% were males .In this study, 51% of the EPTB patients were under the age group of 21Y-40Y and least affected EPTB patients were above the age of 60Y (8.8%).TB lymphadenitis 44.44% was the most common finding in EPTB followed by TB meningitis 14.44%, Abdominal TB 15.55%,TB spine 3.3% and Pericardial effusion 22.22%.Out of these 34% EPTB patients 8.5% were found to be resistant to Rifampicin and others were Rifampicin sensitive. **Conclusion**: The study shows prevalence of rifampicin resistance in EPTB. It is important for health care provider for timely diagnosis, Individualized treatment and enhance surveillance for the detection of Multi drug resistant in the community.

Keywords: Extrapulmonary Tuberculosis (EPTB), Drug-Resistant Tuberculosis (DR-TB), Rifampicin Resistance, Programmatic, Management of Drug-Resistant Tuberculosis (PMDT), Clinical Profile.

INTRODUCTION

India ranks fourth among the global tuberculosis burden1. Extra pulmonary tuberculosis (EPTB) constitutes about 10-40% of all cases of tuberculosis Rifampicin resistance is more common in (EPTB)2. Clinical symptoms and radiological diagnosis are effective for the diagnosis of (EPTB). Drug resistance is mostly a man-made problem that arises through the misuse and mismanagement of medications, either alone or in combination. Tuberculosis causes the second largest number of deaths due to single infectious agents after Covid-19. before covid-19, tuberculosis was the most common cause of global mortality due to an infectious agents3. EP DR-TB consists of a vast clinical spectrum and a formidable challenge We embarked to study the clinical profile and treatment outcomes of EP DR-TB under the programmatic setting. India is one of the highest tuberculosis burden countries in the world and is likely to harbour the largest number of multi-drug resistant tuberculosis (MDR TB) cases. Globally, there were an estimated 9.0 million incident cases and 1.5 million deaths due to tuberculosis in 2013. Of these, the largest number of cases were from India and accounted for an estimated one quarter of all TB cases worldwide. India, China and Russian Federation together account for more than half of the estimated global burden of new MDR-TB cases4

The phenomenon of MDR-TB emerged as a clinical entity in the early 1990s after a couple of decades of widespread use of rifampicin. Ever since, the prevalence of MDR-TB is increasing throughout the world5. Currently, MDR-TB accounts for 3.5 per cent among new cases and 20.5 per cent among previously treated cases, globally4. But countrywide surveillance data are lacking from India particularly that of extrapulmonary TB. Observations from accredited mycobacteriology laboratories from India suggest that the prevalence of MDR-TB is <3 per cent in new cases 15-30 percent among previously treated cases4.

Objectives:

1. To estimate the Prevalence of Extra pulmonary tuberculosis
2. To estimate the Prevalence of Rifampicin resistance in extra pulmonary tuberculosis

MATERIAL & METHODS:
Study design: Retrospective study

Study population: Extra-pulmonary tuberculosis patients attending tertiary care hospital. Study setting: Gulbarga Institute of Medical Science and hospital Gulbarga.

Study period: January 2024- June 2024

Sample size: 90

Inclusion criteria:

1. All symptomatic patients with fever cough, long standing weight loss, hemoptysis Lab diagnosis with clinically confirmed cases.
2. All age group among tuberculosis, extra pulmonary tuberculosis was diagnosed using investigation like FNAC, X-ray, USG, CT scan etc..,

Exclusion criteria:

1. Incomplete data
2. Unwilling to give consent

Data collection:
Patients demographic details, age, site (Pulmonary, extra pulmonary) clinical, radiological findings and drug resistant pattern

Statistical analysis:
Data were entered in Microsoft excel sheet and analysed using SPSS

RESULT:
A total of 269 tuberculosis positive patients were analysed out of which was 34% were diagnosed with EPTB. Among them,54% were female and 45% were males .In this study, 51% of the EPTB patients were under the age group of 21Y-40Y and least affected EPTB patients were above the age of 60Y (8.8%).TB lymphadenitis 44.44% was the most common finding in EPTB followed by TB meningitis 14.44%, Abdominal TB 15.55%,TB spine 3.3% and Pericardial effusion 22.22%.Out of these 34% EPTB patients 25.55% were found to be resistant to Rifampicin and others were Rifampicin sensitive.

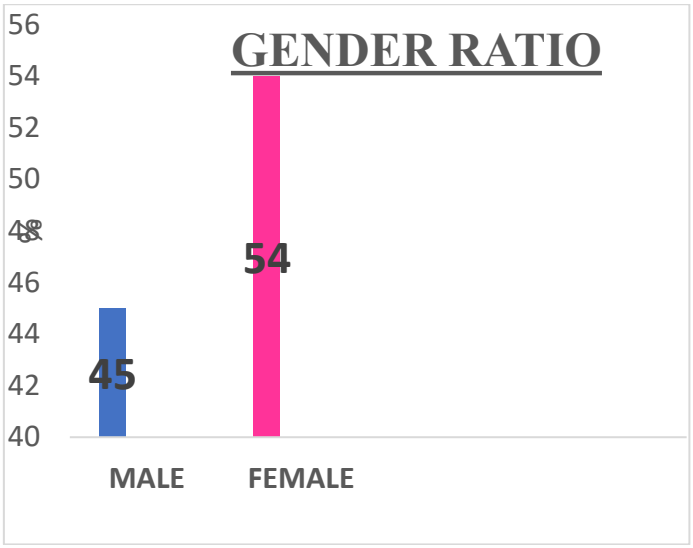
TABLE 1 : PREVALENCE OF EPTB PATIENTS ACCORDING TO AGE

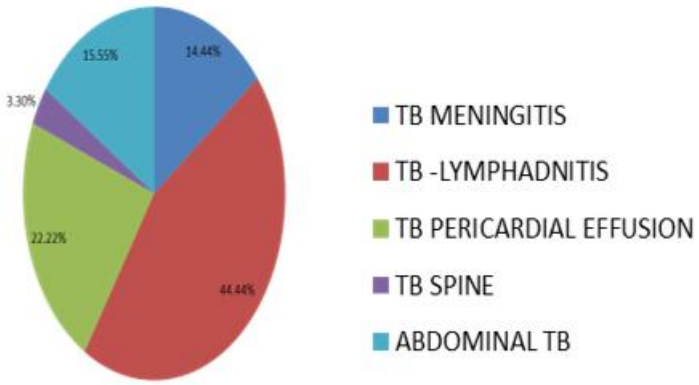
S.No	Age Group	n (%)
1	1 – 20	**17 (18.88%)**
2	21 – 40	**46 (51.11%)**
3	41 – 60	**19 (21.11%)**
4	> 60	**08 (08.88%)**
TOTAL		**90**

TABLE 2 : PREVALENCE OF RIFAMPICIN RESISTANCE EPTB

S. No	RIFAMPICIN SUSCEPTIBILITY	n (%)
1	Rifampicin Resistant EPTB	**23 (25.55%)**
2	Rifampicin Sensitive EPTB	**67 (74.44%)**

	TOTAL	**90**





DISCUSSION:

Extra pulmonary tuberculosis consists of a vast clinical spectrum and a clinical challenge with scarce literature. We embarked to study the clinical profile and treatment outcomes of Extra pulmonary tuberculosis under the programmatic setting. EPTB has been estimated under studied in literature with a variety range of case series of microbiologically confirmed Extra pulmonary tuberculosis

Drug resistance -TB cases Their proportion among the Drug tuberculosis cases is variable In India, Extra pulmonary tuberculosis forms 10-15 per cent of all TB, mostly TB lymphadenitis and pleural effusion. Patients with extrapulmonary manifestations need specialized investigations and the diagnosis is usually based upon clinical, radiographic finding Therefore, there are very few reports available on drug susceptibility patterns of EPTB as these patients are usually not included in dr surveys.

A study conducted by Samanta et al.., in a tertiary care hospital in eastern India in 2014 among patients with tubercular pleural effusion. A total of 50 patients were recruited in this study. only 4 patients had radiological findings and microbiological evidence of active parenchymal tuberculosis6. A study conducted by Damodar et al.., in 2019 found that among 60 patients with tuberculosis, 39 were diagnosed with extra pulmonary tuberculosis. Among 30 were with pleural effusion followed by lymphadenopathy. Prevalence of extra pulmonary tuberculosis is found to be higher7.

A prospective study conducted by Ankita et al.., in 2020 in a tertiary care hospital. This study describes six cases of tuberculosis each involving kidney, breast, endometrium, testis and two cases involving spleen. Affected patients mostly belonged to the third and fourth decades of life with equal male and female distribution1.A Study conducted by Semira et al.., studies were retrieved by searching five data base in 105 studies published in 2023 were included prevalence of extra pulmonary tuberculosis was higher8.

Between 2005 and 2012, of the 1295 extrapulmonary specimens, 189 grew M. tuberculosis, 37 (19%) cases were multidrug resistant (MDR) while one was extensively drug resistant (XDR). Specimen wise MDR prevalence was found to be CSF-

10 per cent, urine-6 per cent, fluids and aspirates-27 per cent, pus-23 per cent, lymph nodes-19 per cent. Resistance to isoniazid and ethionamide was found to be high (31 and 38%, respectively9.

A study conducted by Desai in Extrapulmonary drug resistant tuberculosis at a drug resistant tuberculosis center, Mumbai in total 1743 DR TB patients, 76 (4.4%) EPDR TB cases were included. EP sites involved were lymph nodes in 39 (51.3%), spine in 15 (19.7%), other bones in 6 (7.9%), pleural effusion in 9 (11.9%), central nervous system in 2 (2.6%), and disseminated EP disease in 5 (6.6%). Forty one (53.9%) had multi DR TB (MDR TB), 29 (38.2%) MDR TB with fluoroquinolone resistance {pre extensively DR TB (Pre XDR TB (FQ)), 1 (1.3%) MDR TB with aminoglycoside resistance (Pre XDR TB (AM)), and 5 (6.6%) extensively DR-TB (XDR TB) on DST. Thirteen (17.11%) had comorbidities10.

One more study an attempt was made to analyse the progression of MDR-TB pattern during a course of 13 years (2000-2012) among the patient population at a tertiary care centre in New Delhi, India by reena et al.., Increase in multidrug resistance from 4.7 to 19.8 per cent in the past 13 years, as observed in our study, needs to be noticed. In the present scenario of increasing prevalence of MDR-TB and lack of availability of many second line drugs, screening with culture and drug susceptibility testing should be recommended for all smear positive pulmonary patients11.

The WHO policy guidelines 12for the use of new rapid molecular based techniques for early detection of MDR-TB may help the high-burden countries in identifying and treating patients of MDR-TB quickly13. A study from India has reported that active household contact investigation is a powerful tool to detect and treat tuberculosis at an early stage to break the transmission cycle of the disease14. The existing policies need to be modified to actively find, rapidly diagnose and aggressively treat existing cases appropriately to eliminate transmission of disease.

Drug resistance among previously treated cases may not be a useful proxy of truly acquired resistance as it contains a combination of three types of resistance (i) patients who have acquired resistance during TB treatment; (ii) patients who have been primarily infected with a resistant strain and subsequently failed therapy; and (iii) patients who have been reinfected with a resistant strain15.Research priorities to improve MDR- and XDR-TB prevention and control can be identified at all levels, including basic, applied and operational research16.

The World Health Organization (WHO) has reported a 52% cure rate which is much lower than that for drug-sensitive TB17. Rifampicin-resistant TB (RR-TB) is defined as the cases of TB resistant to at least rifampicin. RR-TB consists of the major DR-TB cases and both the terminologies are used interchangeably18. The WHO recommends reliable drug susceptibility tests (DSTs) should be performed only for rifampicin (R), isoniazid (H), aminoglycosides (AM), and fluoroquinolones (FQ)18,19.

A study conducted by AK Maurya et.al.., in north india found the overall prevalence rate of MDR-TB to be 38.8%, increasing from 36.4% in 2007 to 40.8% in 2010. we found that the prevalence of MDR-TB in new and previously treated cases was 29.1% and 43.3% (P□ □□0.05; CI 95%). The increasing trend of MDR-TB was more likely in pulmonary TB when compared with extra-pulmonary TB (P□□□0.05; CI 95%).20

CONCLUSION:

The study shows prevalence of rifampicin resistance in EPTB. It is important for health care provider for timely diagnosis, Individualized treatment and enhance surveillance for the detection of Multi drug resistant in the community as it is much needed element to minimize the spread of drugresistant Mycobacterium tuberculosis.

REFERENCES:

1. Ankita pranab mandal, Rama saha, Sudipan mitra, Jaydip deb, Study of extra pulmonary tuberculosis in a tertiary care hospital Nat J Laboratory Medicin 2021; 1:PS01-PSO53.
2. Sastry A 2023, 4 th edition, Tuberculosis and non tuberculous mycobacterial infections Jaypee Brothers Medical Publishers 2023.pg no :515-520.
3. Hailu S ,Hurst C, Cyphers G, Thottunkal S, et al.prevalence of extra-Pulmonary tuberculosis in Africa : A systemic review and meta –analysis. Trop Med Int Health 2024; 29 (4):257-65.
4. Global Tuberculosis Report 2014 (WHO/HTM/TB/2014.8) Geneva, Switzerland: World Health Organization; 2014.
5. Gandhi NR, Nunn P, Dheda H, Schaaf HS, Zignol M, van Soolingen D, . Multidrug-resistant and extensively drug-resistant tuberculosis: a threat to global cont rol of tuberculosis. Lancet. 2010;375:1830-43.
6. Samantana J,Mitra s,chakraborty s,kumar C Yashavanth KY, Das S .Pulmonary tuberculosis among patients of tubercular pleural effusion: A single –center experience .Int J Mycobacterial 2023;12:139-43.
7. Damodar paudel, Surendra Lal shrestha. Extra –pulmonary tuberculosis among tuberculosis patients visiting tertiary care centre: A descriptive cross -sectional study. J Nepal Med Assoc 2022; 60(256):1026-9.
8. Hailu S ,Hurst C, Cyphers G, Thottunkal S, et al.prevalence of extra-Pulmonary tuberculosis in Africa : A systemic review and meta –analysis. Trop Med Int Health 2024; 29 (4):257-65.

9. Indian J Med Res 142, November 2015, pp 568-574 DOI:10.4103/0971-5916.171284.
10. Desai U, Joshi JM. Extrapulmonary drug-resistant tuberculosis at a drug-resistant tuberculosis center, Mumbai: Our experience – Hope in the midst of despair! Lung India 2019;36:3-7.
11. Indian J Med Res 142, November 2015, pp 575-582 DOI:10.4103/0971-5916.17128
12. World Health Organization (WHO). Framework for implementing new tuberculosis diagnostics. 2010. Geneva, Switzerland: WHO
13. Raveendran R, Wattal C, Oberoi JK, Goel N, Datta S, Prasad KJ, . Utility of Geno Type MTB DR plus assay in rapid diagnosis of multidrug resistant tuberculosis at a tertiary care centre in India. Indian J Med Microbiol.2012;30:58-63.
14. Singh J, Sankar MM, Kumar S, Gopinath K, Singh N, Mani K, . Incidence and prevalence of tuberculosis among household contacts of pulmonary tuberculos is patients in a peri-urban population of South Delhi, India. PLoS One. 2013;8:e69730.
15. World Health Organization. The WHO/IUATLD global project on anti-tuberculosis drug resistance surveillance. Anti tuberculosis drug resistance in the world. Report No. 4. World Health Organization Document 2008; WHO/HTM/TB/ 2008.394:1–120.
16. Cobelens FGJ, Heldal E, Kimerling ME et al. Scaling up programmatic managment of drug-resistant tuberculosis: aprioritized research agenda. PLoS Med. 2008; 5 (7): e150; doi:10.1371/journal. pmed.0050150.
17. WHO. Multi Drug Resistant Tuberculosis (MDR TB) 2016
18. WHO. WHO Treatment Guidelines for Drug Resistant Tuberculosis, 2016 Update 19.WHO. Policy Guidance on Drug Susceptibility Testing (DST) of Second Line Antituberculosis Drugs; 2008. Indian Journal of Medical Microbiology, (2013) 31(1): 40-46 10.4103/0255-0857.108720. 21.