



PREVALENCE OF PULMONARY AND EXTRAPULMONARY TUBERCULOSIS AND RIFAMPICIN RESISTANCE

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ABSTRACT **Objective:** India contributes 28% of all incidence cases to global TB burden. Drug resistant TB threatens global TB control. Rifampicin resistance in pulmonary TB in India is 4.29% (INDIA-as per WHO data 2020). Globally, the estimated number of deaths from TB increased between 2019 and 2021, 1.4 million deaths among HIV-negative people and 187 000 deaths among HIV-positive people, for a combined total of 1.6 million. Hence the study was taken up to study the prevalence of pulmonary & extrapulmonary tuberculosis and Rifampicin resistance in patients in and around Guntur district retrospectively. **Materials And Methods:** A retrospective study was conducted from January 2022 to June 2022 on tuberculosis patient including pulmonary and extrapulmonary tuberculosis cases. Total of 670 samples were processed by Microscopy and CBNAAT. **Result:** Out of 670 TB patients, 499 (74.5%) were male and 171 (25.5%) were female patients. Most common age group is 41-50 years. Pulmonary TB patients were 619 (92.4%), extrapulmonary TB patients were 51 (7.6%). 603 (90%) were found to be Rifampicin sensitive, 8 (1.2%) were Rifampicin indeterminate and 59 (8.8%) were Rifampicin resistant. Out of 670 patients, 426 (63.6%) patients were from rural area and 244 (36.4%) patients were from urban area. Overall 55 (8%) patients were found to be HIV seropositive. All the 59 Rifampicin resistant cases were also found to be pulmonary TB cases. Rifampicin resistance among the HIV positive cases is 0.4%. 8 rifampicin indeterminate cases were found to be pulmonary TB cases. Among the 603 Rifampicin sensitive cases, 552 cases were pulmonary TB and 51 were extrapulmonary TB cases. **Conclusion:** Pulmonary tuberculosis is more common than extrapulmonary tuberculosis. Middle age group population, male gender are more affected. Rifampicin resistance is more common in pulmonary TB. Timely diagnosis and effective screening for drug resistance needed to prevent spread of drug resistant strain and to reduce mortality.

KEYWORDS : Prevalence, Rifampicin resistance, Pulmonary TB, Extrapulmonary TB.

INTRODUCTION

Tuberculosis is one of the dreaded diseases which accounts for 10.6 million cases globally (as per global TB report 2022). Globally, the estimated number of deaths from TB increased between 2019 and 2021, 1.4 million deaths among HIV-negative people and 187 000 deaths among HIV-positive people, for a combined total of 1.6 million. The burden of drug-resistant TB (DR-TB) is also estimated to have increased between 2020 and 2021, with 450 000 new cases of rifampicin resistant TB (RR-TB) in 2021.

As per global TB report 2015, estimated TB burden in India is 2.2 million new TB cases annually – 167 cases per 100,000 population, prevalence is 2.5 million cases – 195 cases per 100,000 population, about 220,000 deaths each year – 17 deaths per 100,000 population, approximately 5% of TB patients estimated to be HIV positive. DR-TB 2.2% in new cases and 15% in previously treated cases.

India has notified 21.8 lakh TB cases in the year 2021 (18% higher than 2020). India contributes 28% of all incidence cases to global TB burden. Tuberculosis is major health problem because of high mortality, morbidity and transmission. It is very important to diagnose and treat TB early. Drug resistant TB in India was found to be 1.19 lakh in 2021 (20% decline from 1.49 lakh in 2015), (INDIA-as per WHO TB report 2022). Drug resistant TB threatens global TB control.

MATERIALS AND METHODS:

Study Design, Period:

- A retrospective study was conducted in Infectious Disease Hospital (IDH) at Guntur district of Andhra Pradesh for the period of six months from January 2022 to June 2022.

Study Participants:

A total of 670 patients were enrolled in study.

Study Procedure:

- 670 samples were included in the study after approval by Institutional Ethical Committee.
- Samples were processed by
 - 1) Microscopy (Acid fast staining) and
 - 2) CBNAAT (detection of MTB complex and Rifampicin sensitivity)
- Screening of HIV seropositivity.

RESULTS:

In the present study, out of 670 TB patients, 499 (74.5%) were male and 171 (25.5%) were female patients. Pulmonary TB patients were 619 (92.4%), extrapulmonary TB patients were 51 (7.6%). 603 (90%) were found to be Rifampicin sensitive, 8 (1.2%) were Rifampicin indeterminate and 59 (8.8%) were Rifampicin resistant. Out of 670 patients, 426 (63.6%) patients were from rural area and 244 (36.4%) patients were from urban area. Overall 55 (8%) patients were found to be HIV seropositive.

Among the 59 Rifampicin resistant cases, 41 were male, 18 were female patients. 3 (0.4%) patients tested HIV positive. 31 patients were from rural area and 28 patients were from urban area. All the 59 Rifampicin resistant cases were also found to be pulmonary TB cases.

Among the 8 rifampicin indeterminate cases, 5 were male and 3 were female patients. 2 patients tested HIV positive. 3 patients were from rural area and 5 patients were from the urban area. 8 rifampicin indeterminate cases were found to be pulmonary TB cases.

Among the 603 Rifampicin sensitive cases, 552 cases were pulmonary TB and 51 were extrapulmonary TB cases.

Table-1 Age-wise Distribution Of Pulmonary And Extrapulmonary TB

Age-wise (age in years)	No. of patients	Percentage
0-10	0	0%
11-20	47	7%
21-30	103	15.4%
31-40	131	19.6%
41-50	165	24.62%
51-60	113	16.86%
61-70	83	12.3%
71-80	28	4.1%

Table-2 Gender-wise Prevalence Of Tuberculosis

Gender	No. of TB patients	Percentage
Male	499	74.5%
Female	171	25.5%
Total	670	100%

Table-3 Prevalence Of Pulmonary And Extrapulmonary TB

	Pulmonary TB	Extrapulmonary TB	Total
Male	475	24	499
Female	144	27	171
Total	619	51	670

Table-4 Extrapulmonary TB

Type of Extrapulmonary TB	No. of cases
Lymph node TB	22
Abdominal TB	6
Bone (excluding spine)	4
Miliary TB	1
Pericardial TB	1
Pleural TB	10
Spine	1
Others	6
Total	51

Table-5 Rifampicin Sensitivity Pattern In Pulmonary And Extrapulmonary TB

Rifampicin sensitivity	Pulmonary TB	Extrapulmonary TB	Percentage
Rifampicin resistant	59	0	8.8%
Rifampicin indeterminate	8	0	1.2%
Rifampicin sensitive	552	51	90%
Total	619	51	100%

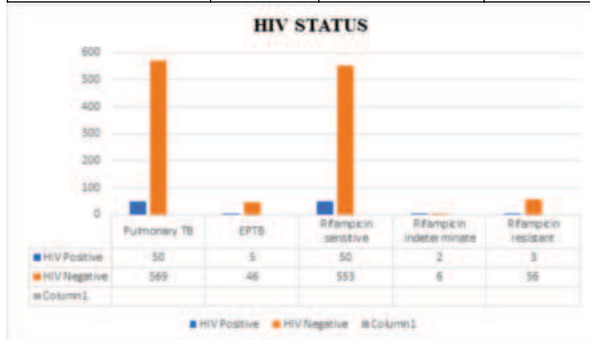


Figure 1: HIV status



Figure 2: Rural/Urban area

DISCUSSION:

Tuberculosis remains a major global health problem, especially in developing countries like India. In the present study, out of 670, male 499 (74.5%), female 171 (25.5%), male predominance noted correlating with study by Shamseeda A *et al.*

In the present study, most common age group is 41-50 years which is close to another study by Smita S. Shivekar *et al.*, 18-45 years. Young and adult age groups are commonly involved than children and elderly patients.

In the present study, 63.6% patients are from rural area and 36.4% of the patients are from urban area which is similar to another study by Ramadass Sathiyamoorthy *et al.* where more tuberculosis cases are from rural area than urban area. In the present study, 54% of the extrapulmonary TB cases were from urban area which is closer to another study by Shrivastava AK *et al.* (62%).

In the present study, pulmonary tuberculosis cases were 619 (92.4%), extrapulmonary TB patients were 51 (7.6%); Correlating with another study done by Shrivastava AK *et al.* where there also more pulmonary tuberculosis cases than extrapulmonary tuberculosis.

In the present study, all the extrapulmonary TB cases (51 cases) were found to be rifampicin sensitive. Rifampicin resistance is found only among Pulmonary TB cases (8.8%), which correlates with study by Jitendra Chandra Devrari *et al.*

In the present study, 55 (8.2%) cases were of HIV positive which is higher comparing to the another study by Tapati Mondal *et al.* where 3.91% were HIV positive.

In the study done by Devrari *et al.*, rifampicin resistance is 3.2%. In the present study, rifampicin resistance is little higher (8.8%).

In the present study, male patients (6.1%) show more rifampicin resistance than female patients (2.7%) which is correlating to another study by Devrari *et al.* where rifampicin resistance among male patients is 2.2% and among female patient is 1%.

In the present study among the rifampicin resistant cases, 31 (4.6%) patients were from rural area and 28 (4.17%) patients were from urban area. In the study by Sreenivas Achuthan Nair *et al.*, most of the rifampicin resistant cases were from rural area (2.2%).

In the present study HIV positivity among rifampicin resistant cases is 0.4% which is lower compared to another study by Tapati Mondal *et al.* showed 11.57%.

CONCLUSION:

According to this study, Pulmonary Tuberculosis is more prevalent compared to extra-pulmonary Tuberculosis. Prevalence of Rifampicin resistance is found to be high in Pulmonary TB. Accomplishment of WHO End TB strategy is very important to end TB by 2030. Since many tuberculosis cases were undiagnosed due to various social reasons, it is essential to diagnose and screening for Rifampicin resistance, and to treat effectively so that mortality and morbidity can be significantly reduced.

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