

Prevalence of H mono resistance Pulmonary Tuberculosis in Bhavnagar District, Gujarat India

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Abstract: Tuberculosis (TB) still is one of the major health problems faced in India. India accounts for almost a quarter of TB cases worldwide. According to the Global TB Report 2017, 28 lakh new cases were reported in India. 4.5 lakh people die every year due to TB. Drug resistant TB is one of the major cause of mortality, H mono resistance being one of them. Sputum samples of patients who are eligible for Category 2 AKT and those who remain sputum positive after the initiation phase of Cat 1 AKT (Category 1 Anti Koch's Treatment) are subjected to undergo Line Probe Assay (LPA) for drug sensitivity. The results from the study provides evidence that the standardized treatment schedule for new and previously treated patients with 1st line drugs is associated with H mono resistance and thus treatment failure and mortality.

Keywords: Drug sensitivity, H(Isoniazid) mono resistance, India, LPA (Line Probe Assay), Pulmonary Tuberculosis.

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I. Introduction

According to the Programmatic Management of Drug-Resistant Tuberculosis in India, sputum samples of patients eligible for Cat 2 AKT and are positive for Acid fast bacilli (AFB) and those who remain positive for AFB after the Initiation phase of Cat1 AKT are subjected to undergo Line Probe Assay (LPA).

LPA are designed to identify M.tuberculosis(mycobacterium tuberculosis) complex and simultaneously detect mutations related to drug resistance. LPA have high sensitivity and specificity for detection of both Isoniazid and Rifampicin resistance. LPA uses PCR (polymerase chain reaction) and reverse hybridization methods for detection of mutations.

II. Background

Tuberculosis (TB) still is one of the major health problems faced in India. India accounts for almost a quarter of TB cases worldwide. According to the Global TB Report 2017, 28 lakh new cases were reported in India. 4.5 lakh people die every year due to TB. Drug resistant TB is one of the major cause of mortality, H mono resistance being one of them.

III. Materials and Methods

Sputum samples of patients who were started on Cat 2 AKT and of those who remain sputum positive after 2 months of Initiation phase of Cat 1 AKT are sent to Intermediate Reference Laboratory (IRL) for LPA for 1st line drugs.

Study design: Prospective, observational study.

Study location: Study was done in the Department of Respiratory Medicine, Government Medical College, Bhavnagar, Gujarat, India.

Sample size: A total of 248 samples were sent for LPA.

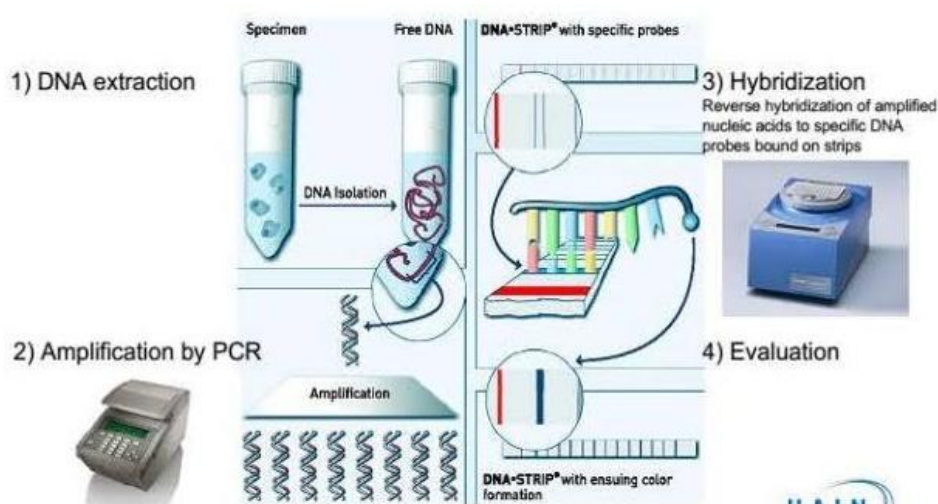
Study duration: 01st January 2018 to 31st December 2018.

Inclusion criteria:

Cases of pulmonary tuberculosis that are either drug defaulter, relapse or failure and are sputum positive for AFB and

All cases of pulmonary tuberculosis that remain sputum positive after the initiation phase of Cat 1 AKT.

Line Probe Assay: LPA are designed to identify M.tuberculosis complex and simultaneously detect mutations related to drug resistance. LPA have high sensitivity(84.6%) and specificity(94.6%) for detection of both Isoniazid and Rifampicin resistance. LPA uses PCR and reverse hybridization methods for detection of mutations.



IV. Results

A total of 17 samples from 248 were found to be resistant to only Isoniazid and these were sensitive to Rifampicin. This amounts 6.85% of the samples being resistant to Isoniazid.

Total sputum samples	248
M.tuberculosis detected	241
Isoniazid resistance detected	17
Rifampicin resistance detected	03
Isoniazid + Rifampicin resistance detected	04

V. Other findings

M.tuberculosis was not detected in 7 samples out of the sent 248 samples. 3 samples were resistant to Rifampicin only and were sensitive to Isoniazid. 4 samples were resistant to both the drugs.

VI. Conclusion

- The results from the study provides evidence that the standardized treatment schedule for new and previously treated patients with 1st line drugs is associated with H mono resistance and thus treatment failure and mortality.
- Drug resistance should be suspected in patients not improving on standard regimen.
- Patients not improving on standard regimen of 1st line drugs should undergo drug susceptibility testing before a new drug is added to the failing regimen.

References

Guidelines on Programmatic Management of Drug-Resistant Tuberculosis in India 2017.

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