SUMMARY

The recent increase in the incidence of tuberculous infection in certain parts of the world and the emergence of multi-drug resistant strains, has urged the need for its rapid diagnosis. The delayed identification and susceptibility testing of drug resistant Mycobacteria and failure to appropriately isolate contagious patients had helped much in transmission of multi-drug resistant *M.TB.*

The aim of this work is the rapid detection of rifampicin resistant *M.TB* strains in pulmonary tuberculous patients by Mycobacterium phage assay (fast plaque response (TM) assay).

This study was done at Chest Out-Patient Clinic of Benha University hospital, Benha Chest hospital and Microbiology & Immunology Department of Benha Faculty of Medicine from January to June (2010) on 50 patients (37 males and 13 females). Their age ranged from 18-67 years. The selection of patients was done according to clinical and radiological data suspecting pulmonary tuberculous infections. Patients were classified into two groups:

I- Twenty nine patients with no history of antituberculous treatment

II- **Twenty one patients receiving rifampicin:** those patients were subdivided into 2 subgroups:

1- Thirteen patients starting antituberculous treatment with no problems.

2- Eight patients with previous history of failed antituberculous treatment.

Early morning sputum sample was collected from each patient and subjected to the following:

I- Staining:

1- Ziehl neelsen stain

2- Flourescin diacetate (FDA)/ Ethidium bromide (EB) staining.

II- Culture on Löwenstein-Jensen (LJ) medium; the suspected cultured colonies will be identified by:

- Ziehl Neelsen stain
- Nitrate reduction test
- Niacin production test

III- Fast plaque TB rifampicin susceptibility assay.

The results of the study showed the following:

1. The age of patients under study ranged from 18 to 67 years old, the highest rate of tuberculosis was 18 (36%) cases in the age group 20- ≤30

2. As regards sex distribution among the studied patients, out of 50 patients; 37 (74%) were males and 13 (26%) were females.

3. As regards the occupation of patients under study, out of 50 studied patients 31 (62%) were workers, 13 (26%) were housewives and 6 (12%) were employers.

4. Sixteen (32%) out of 50 cases under this study were cigarette smokers, 14 (28%) were goza smokers and 6 (12%) were both cigarette and goza smokers.

5. Out of 50 sputum samples of the studied patients 42 (84%) and 8 (16%) were ZN stained smear positive and negative respectively.

6. Out of 42 smear positive patients 25 (59.5%) of them were not receiving any antituberculous treatment, 17 (40.5%) were under antituberculous treatment including rifampicin for more than 2 months

7. Out of 8 (16%) smear negative patients 4 (50%) had no history of antituberculous treatment and the other 4 (50%) were under antituberculous treatment including rifampicin.

8. All 50 studied sputum samples were positive for FDA/EB stain; out of 50 FDA/EB stained smear 23 (46%) showed viable bacilli, 4 (8%) showed dead bacilli and 23 (46%) showed both viable and dead.

9. Out of 50 sputum samples 42 (84%) were positive by FDA stain and ZN, 4(8%) were negative by both . The sensitivity and specificity of FDA stain were 100% and 50% respectively

10. LJ culture results of 50 studied sputum samples shows that out of 50 sputum samples 46 (92%) samples were positive for acid fast bacilli while 4 (8%) were negative.

11. Out of 50 sputum samples 42 (84%) were positive by Z.N and L.J culture, 4 (8%) were negative by both and 4 (8%). were negative by Z.N only. The sensitivity and specificity of Z.N stain were 91.3% and 100% respectively.

12. Out of 50 sputum samples 46 (92%). were positive by FDA stain and LJ culture, 4 (8%). were negative by both. EB stain 4 samples which is L.J negative. For FDA stain the sensitivity and specificity were 100% for both in relation to LJ culture.

13. the results of fast plaque response (TM) assay of 50 studied sputum samples revealed that 35 (70%) were positive while 15 (30%) out of them were negative.

14. Out of 46 mycobacterial isolates, 41 (89.1%) isolates were biochemically typed as being *M. tuberculosis* whereas the other 5 (10.9%) were MOTT.

15. The relation between Z.N and antituberculous drug intake including rifampicin reveals that the rate of AFB detection by ZN were almost the same among patients under antituberculous treatment and patients who had no history of antituberculous treatment. This difference is statistically insignificant.

16. The relation between LJ culture results and antituberculous drug intake including rifampicin reveals that the rate of AFB detection by LJ was higher among patients who had no history of antituberculous treatment than patients under antituberculous treatment. This difference is statistically significant

17. As regards the relation between the demographic data of tuberculous patients and rifampicin resistance, there is insignificant statistical differences in the relation between sex, age and smoking with rifampicin resistance results.

18. There is a significant statistical difference as regards the relation of D.M and rifampicin resistance. There are insignificant

statistical differences in the relation between each of cavitation, T. B history, history of contact with T.B case with rifampicin resistance results.

19. Out of 50 patients 17 (34%) were rifampicin resistant and 33 (66%) were rifampicin susceptible. Out 17 of the rifampicin resistance cases, 9 (52.9%) had primary rifampicin resistant and 8 (47.1%) had secondary rifampicin resistant.

20. Out of 17 rifampicin resistant patients 2 (11.8%) had minimal clinical condition, 4 (23.6%) had moderate and 11 (64.7%) advanced clinical condition.