7. SUMMARY

- Out of the 416 HIV patients, 162 (40%) cases were with features suggestive of TB but sputum smear negative, were studied in a period of 28 months.

- Among the 162 cases, 67 (41.4%) patients were suspected to have both tuberculosis and candidiasis.

- Blood (lysis centrifugation) and other clinical samples yielded 76 mycobacterial isolates.

- Of the 76 strains, 69 (90.8%) were typical Mycobacteria and 7 (9.2%) were atypical Mycobacteria.

- Multidrug resistance was observed in 5 (6.6%) isolates.

- Candidiasis were observed in 100 (24%) among the 416 HIV reactive cases.

- Out of the 100 cases, 109 Candida isolates were recovered.

- NAC (61.5%) were more predominant than C. albicans (38.5%).

- Candida parapsilosis, Candida tropicalis, Candida krusei, Candida guilliermondii, Candida lusitaniae, Candida glabrata, Candida albicans were the species isolated.

- Single species were isolated from 87 patients and mixed species from 11 patients.

- Of the 109 Candida isolates 16 (15%) were resistant to one drug and 93 (85%) were sensitive to all the drugs tested.

- C. albicans exhibited resistance to both fluconazole and flucytosine whereas C. tropicalis to flucytosine only.
CONCLUSIONS

Tuberculosis is the first infectious disease declared by WHO as a global health emergency.\textsuperscript{47} Timely diagnosis of TB (both sputum smear positive cases and negative cases) along with the detection of drug resistance is extremely important in order to plan a therapeutic conduct and control TB. India being a highly prevalent area in HIV and TB diseases, physicians should have a high clinical suspicion of TB in HIV patients, and all HIV individuals should be screened for TB. If patients are diagnosed at an early stage of the disease, the mortality and transmission rate could be reduced as TB is treatable. Diagnostic techniques that are sensitive, specific and easy to use in remote resource poor settings such as - culture of clinical samples and blood - lysis centrifugation technique could be a more sensitive tool to detect smear negative TB cases in HIV reactive patients. Our study implies that the use of culture is a reliable tool in diagnosing smear negative cases, because almost 50\% of the cases included in study were culture positive. MDR-TB (7\%) was observed among the isolates which helped not only in diagnosis of TB in HIV reactive cases but also to choose the right drug for the treatment. The incidence of MDR-TB in high TB burden settings, stresses the need for DST to be done to all the patients, who are culture positive for \textit{M.tuberculosis} (especially in HIV seropositive patients who carry a high mortality risk). Also, early diagnosis may prevent therapy with inappropriate regimens, improve prognosis, prevent MDR-TB strains from developing additional resistance and prevent transmission.

The molecular diagnostic strategies could be used to identify patients with or without MDR/XDR-TB strains, but efforts to reduce their cost and simplification of the technique is needed for resource limited settings. Mycobacterial culture based
studies not only detect TB, but also helps in detecting drug resistant Mycobacteria. TB control programme can be effective, only if private practitioners diagnose TB at an early stage, test for DST and join hands with RNTCP services in providing proper regimen. Many patients are left undiagnosed for TB for reasons of no advanced /high cost techniques available. In such situations, existing facilities like culture can be completely utilized. Culture being cost effective, sensitive and a gold standard, can be routinely used in the laboratory as a tool in diagnosing smear negative TB cases.

Candidiasis is the most common fungal opportunistic infection in HIV reactive patients which is found in the early phase of AIDS and thus acts as an indicator of the onset of immunodeficiency. Routine checkups for candidiasis and other common opportunistic infections in HIV seropositive patients can help in monitoring the disease progression and may prevent complications. Diagnosis of candidiasis should accompany speciation and susceptibility testing because, along with Candida albicans even NAC are emerging as drug resistant pathogens. Therefore to assess the nature and magnitude of the problem due to candidiasis in HIV patients in developing countries, it is necessary to know the epidemiology and species prevalence to provide effective therapy. This not only reduces mortality rate but also improves the quality of life in HIV infected patients.

Genotype MTBDR assay and Vitek 2 automated systems helped to speciate and detect drug resistance in a rapid way but with cost constrains.

Speciation and drug susceptibility testing plays an increasingly important role in guiding therapeutic decision, aid in drug development research, and also in tracking the development of mycobacterial and candidal resistance in epidemiologic studies.