Centre of excellence on HIV/AIDS Medicine.

RESEARCH PROJETS

ICMR Project details:

Title of the project: Investigative workup of smear negative cases of Tuberculosis (TB) in HIV patients & antibiogram of Mycobacterial isolates.

Principal Investigator and Co-Investigators: Dr M N Sumana and Dr K Jayshree

Duration: 3 years

Date of commencement: 26.03.2010 to 2013

Abstract (300 words submitted for ICMR).
Introduction: Tuberculosis (TB) and HIV infections have fueled each other. India being a high burden country shoulders a greater responsibility in handling these. Multidrug resistance (MDR) is also on the rise throughout the globe. Hence, this study on TB in HIV patients was taken up and antibiogram of mycobacterial isolates was carried out.

Objective:

- To diagnose TB in HIV reactive patients but AFB smear negative, by culture.
- To detect drug susceptibility of these isolates.
- To compare the antibiogram of these isolates with that of:
  - ✓ HIV reactive and AFB smear negative patients- Group A.
  - ✓ HIV reactive and AFB smear positive patients- Group B.
  - ✓ HIV negative and AFB smear positive patients- Group C.

Materials and Methods: Patients attending a tertiary care hospital in Mysore were the study subjects. From Group-A blood and stool samples along with other relevant specimens were collected. From Group-B and Group-C only sputum samples were collected.
All samples were processed for direct microscopy by Zeihl Neelsen staining and cultured on Lowstein-Jensen media. Blood samples were processed after lysis centrifugation. The mycobacterial isolates were subjected to antimicrobial susceptibility by proportion method.

Results: Out of 162 patients having features of TB and HIV reactive, 76 mycobacterial isolates were obtained. Of these 69 were typical and 7 were atypical. Out of these 5 were MDR and 26 resistant to atleast single drug. Antibiogram of these isolates when compared with Group-B and Group-C isolates showed that the MDR rate [5(6.6%), 2 (6.7%), 4 (8%)] did not differ much. But resistance to atleast single drug was 26 (34.2%) in Group-A, 3(10%) in Group-B and 8 (16%) in Group-C.
Conclusion: Culture of specimens for Mycobacteria is more sensitive in detecting more TB cases in HIV reactive patients. Antibiotic susceptibility tests showed that HIV does not in any way influence the drug susceptibility pattern.

1. Arnaw Kishore, Sumana M. N. "Assasying the Need of Commercial Plasma Viral Load Testing In Resource Limited Settings". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 75, September 17; Page: 13122-13134,

Online link – DOI: 10.14260/jemds/2015/1889.

ABSTRACT: Around nine million Human Immunodeficiency Virus (HIV) infected individuals are on antiretroviral therapy (ART). People living with HIV/AIDS in resource-limited settings where HIV burden is usually high, there is an urgent need of affordable, accessible and inexpensive tests to monitor response to treatment. Quite a few commercially available assay has been introduced to measure Plasma Viral Load (PVL) as testing can increase adherence to ART and facilitate timely switching of failing regimens and thus minimizing the development of resistance. We analyzed Nucleic Acid Test (NAT) based assay and Non Nucleic Acid Test based assay for PVL testing. Though both the assay has its own advantage and disadvantages, but the use of Non Nucleic Acid Test has an upper hand in resource limited settings. It is the duty of administration, clinicians, microbiologist and health care personnel to introduce appropriate laboratory monitoring assays in resource-limited settings.

2. Arnaw Kishore, Sumana M Neelambike. Application of Radial Basis Function Network Tool for Correlation of CD4+ Count with Plasma Viral Load in HIV-Seropositive Individuals 2016;10 (4) : 5 – 8.
   Online link – DOI: 10.7860/JCDR/2016/17745.7604

ABSTRACT

Introduction: Human Immunodeficiency Virus (HIV) infects and cripples the immune system of the body. The two important marker CD4+T cells and Plasma viral load are crucial not only in understanding the disease progression but also in starting the antiretroviral therapy. A lot of research is going on in understanding the dynamic nature of HIV.

Aim: To find the correlation between CD4+ count and Plasma Viral Load (PVL) measured by two different technologies; with the help of correlation technique in conjunction with the three dimensional HIV model with a purpose of establishing a mathematical model between the CD4+ cells and PVL using a sinusoidal function as well as Radial Basis Function (RBF) neural network.

Materials and methods: Plasma Viral Load were determined by two different methods viz Exavir Cavidi(TM) and Abbott Real time HIV-1 assay and then they were correlated with the CD4+ count with the help of computational intelligence in predicting viral load.

Results: It was found that there exists a positive correlation between the CD4+ cells and viral loads. A correlation value of 0.4082 and 0.3652 was observed between CD4+ cells and viral measured using Exavir Cavidi(TM) and Abbott Real time HIV-1 assay respectively.

Conclusion: The existence of positive correlation had helped us to understand the nature and dynamic of the existence of HIV and how the CD4 + and PVL act.

3. Kishore A, Nagpal B, Sumana M, Hegde U. A Cross Sectional Study of the Co-Infection of Hepatitis B and Hepatitis C Virus among HIV Seropositive Patients.. IJHSR. (2016), [cited January 06, 2016]; 6(1): 150-153.
   Online link –https://www.ijhsr.org/IJHSR_Vol.6_Issue.1_Jan2016/23.pdf

ABSTRACT – Human immunodeficiency virus (HIV) with the co-infection of Hepatitis B virus (HBV) and Hepatitis C virus (HCV) has emerged as a serious global public health problem. The co-infection not only accelerates the HIV progression but also creates complication in treating patients with HIV. Although there are studies on seroprevalence of HIV, HBV and HCV, similar study is lacking in Mysuru city. The aim of the present study was to estimate the hospital based seroprevalence of HBV and HCV among HIV seropositive patients.

4. Sumana MN, Arnaw Kishore* Prevalance of HIV and Syphilis among patients attending ICTC centre in a Multispecialty Hospital in Heritage City. International Journal of Medicine and Pharmaceutical Research, 2014, Vol.2 (6): 729-733. 10.

Online link – https://www.pharmaresearchlibrary.com/prevalance-of-hiv-and-syphilis-among-patients-attending-ictc-center-in-a-multispeciality-hospital-in-heritage-city/

ABSTRACT

It is estimated that globally, 34.0 million [31.4 million–35.9 million] people were living with H.I.V at the end of 2011. According to W.H.O. estimates, 15% (50 million) of the 340 million new annual sexually transmitted infection (S.T.I.) cases are in India, and 44% (151 million) in South and South-East Asia. High burden of syphilis is found among population of developing countries. HIV and *Treponema pallidum*, the causative agent of syphilis both of them are sexually transmitted. Concurrent infection with *Treponema pallidum* and HIV presents a serious health problem. HIV alters the natural history of syphilis and response to therapy. Incidence of neuro syphilis is increased among the HIV infected persons, even when treated in recommended complete dosage. Most of the study has been done are on blood donors, while a very few literature state prevalence of syphilis exclusively among HIV sero positive individuals. The overall prevalence rate of syphilis in Karnatakka is 0.11%, in the present study the prevalence of syphilis was 7.0% similar to data presented by Saurabh et al among HIV sero positive populations, while the total prevalence among patients attending the I.C.T.C. centre was 0.29% which matches with the data presented by Nirali shah et al where the prevalence was found to be 0.23%. The purpose of the study is to find out the co infection and prevalence of syphilis in a HIV positive male and females attending Integrated Counselling and Testing Centre (I.C.T.C.), in a multispecialty centre in south India.

5. Sumana MN, Arnaw Kishore* KAP of HIV/AIDS among IT Professionals in Indian Silicon Valley – A Pilot Study. European Academic research 2015Vol 3(1) 556-71. http://www.euacademic.org/UploadArticle/1559.pdf

ABSTRACT: AIDS was first recognized in 1981 in the USA among homosexuals. Since then HIV/AIDS has emerged as the challenge to Health care personnel's, public health, human rights and in the development in the new era free of HIV/AIDS. There is still a lot of social stigma attached with it. As a responsible individual of society every one of us must understand and think HIV/AIDS prevention as a part of our collective social responsibility (CSR). Most of the literatures on KAP on HIV/AIDS are replete with studies on children, school/ college students, general population, but the authors are yet to come across a study from Engineers and Managers working in the corporate sectors. This study gives more emphasis in an attempt to understand the KAP among working professionals of Engineers and Managers.