

Opportunistic Infections Vs Immune Suppression Among HIV Seropositive Individuals in East Godavari District, Andhra Pradesh

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Abstract

To detect the opportunistic infections (OIs) and level of immune suppression in HIV seropositive patients in East Godavari district, Andhra Pradesh. Material and methods: Study was conducted in the department of Microbiology, Rangaraya Medical College, Kakinada, referral center for HIV diagnosis and treatment by NACO. Study period 27 months, January 2011 to April 2013. Clinical specimen include stool, sputum, CSF, lymph node aspiration, swabs from oral cavity, blood were collected from 178 confirmed HIV seropositive individuals. Results: Male female ratio was 1.41: 1. More number of HIV positive cases were seen in the age group of 31-40 years (34

Index terms— HIV, opportunistic infections (OIs), mycobacterium, candida.

1 Introduction

The unique pathogenesis of HIV virus and drop in CD4 count are the two aspects responsible for the emergence of opportunistic infections (OIs) in HIV patients [1]. Due to decrease in immunity, people with HIV are prone for OIs and these infections are recognized as common complication [2,3,4]. OIs are major cause of morbidity and mortality in HIV patients [5,6]. In the HIV positive individuals the incidence of OIs is reduced dramatically with introduction of Anti retroviral treatment (ART). But ART is not available to all in the resource limiting countries like India [7]. AIDS is the most important problem in 20th century [3] and leading cause of death. So care has to be taken to prevent and treat the OIs.

Various microorganisms cause OIs in HIV patients. As per the available literature tuberculosis, candidiasis, cryptosporidium diarrhoea, cryptococcal meningitis, pneumocystis carinii pneumonia are some of the common OIs in the HIV seropositive individuals [8]. The frequency of OIs may not be same in all countries and differ within the country. In resource limited, developing and high HIV burden countries like India the incidence and severity of OIs is high. But the literature which is available in this regard is limited especially with the correlation of immune suppression.

AIDS caused by HIV may not be curable. But the OIs can be treated. Hence identification of OIs causing pathogens is very important and essential in HIV patients for disease management. This not only prolongs the life of HIV individuals but also improves the quality of life.

We conducted a study to identify OIs causing microorganisms in HIV patients of East Godavari district in relation to the immune status.

2 II.

3 Material and Methods

Study was conducted in the department of Microbiology, Rangaraya Medical College (RMC), Kakinada, for 27 months, study period January 2011 to April 2013. RMC, a National AIDS Control Organization (NACO) referral

center for HIV diagnosis and treatment in East Godavari district, Andhra Pradesh. So HIV seropositive patients from different parts of district were included in the study.

Study population consists of HIV positive patients, both genders. Informed consent was taken from all the individuals in the presence of witness if required i.e. in case of minors and illiterates. Based on clinical condition and patient status various clinical samples were collected. This include stool, sputum, CSF, lymph node aspiration, swabs from oral cavity, blood.

Stool samples were collected in a wide mouth bottle. All the volunteers were instructed clearly that stool sample should not get contaminated with urine. Trophozoites, cysts, larva and helminthic ovum were identified in the stool samples by observing saline, lugols iodine mount and LPCB mount 9,10 . In addition stool smears were stained by modified ZN staining 10 to identify protozoan parasites like *Cryptosporidium parvum*, *Isospora belli*, *Cyclospora*. The predominant bacteria cause enteric infection, *Salmonella*, *Shigella*, *Vibrio cholerae* were isolated and identified by inoculating stool sample on MacConkey agar, selective media i.e. XLD / DCA/ TCBS and growth is identified by various biochemical reactions as per the standard protocols 11,12 .

Sputum samples were collected as per Jaya Chandra et al 13 i.e three deep breaths followed by a deep cough. Minimum 5ml of sputum sample was collected. Immediately after collection, smear was prepared and stained by Ziehl Neelsen staining as per Revised National Tuberculosis Control Programme (RNTCP) guidelines 14 . After smear preparation, sputum samples were concentrated and decontaminated by NALC NaOH method 15 and the deposit was inoculated in 2 sets of LJ media and incubated at 37 0 C. LJ culture reading was done as per RNTCP guidelines 16 .

Oral swabs were inoculated on Sabourds Dextrose Agar (SDA) to identify candida which is the causative agent of oral candidiasis. For speciation, chlamydospore formation, germ tube test was done and the isolated candida was also inoculated on chrome agar ??? .

CSF samples were collected from meningitis patients. Gram stained CSF smears were observed to identify the bacteria or fungal causative agents and India ink smears to identify cryptococcus capsule. CSF samples were inoculated on Chocolate agar, MacConkey agar, SDA and processed as per the standard protocol 10,11 .

In addition to clinical correlation, blood samples were tested for ELISA to identify Herpes simplex virus, Cytomegalo virus infections. CD4 counts were estimated by using BD FACS caliber machine as per the NACO guidelines.

4 III.

5 Results

In the study male female ratio was 1.41: 1. More number of HIV positive cases were seen in the age group of 31-40 years (Table ?? 1). Fever (72%) was the most common symptom followed by weight loss (69%) and chronic cough (44%) (Table ?? 2). *Mycobacterium tuberculosis* (51%) was the most commonly isolated pathogen, followed by *Candida* (39%), *Cryptosporidium parvum* (24%) (Table ??

6 Discussion

AIDS the only cause of HIV is the burning health issues of developing countries like India. India accounts for 1% of global burden. In AIDS patient's death is mainly due to OIs not by HIV. The important observation in our study is that OIs are seen in all the study subjects. So prevalence of OIs is 100%.

In our study majority of HIV positive cases were seen in the age group 31 -40 years, 34% (60 out of 178 cases). Madhkar SS et al 4 and Patel SD et al 18 reported 53.3%, 52% HIV positivity in 31 -40 years age group.

The present study showed that fever (72%) is the most commonly presenting symptom, followed by chronic cough (49%), chronic diarrhoea (48%), oral thrush (34%) and lymphadenopathy (25%). Most of the study subjects were presented with mixed symptoms. Findings of our study were very close with Patel SD 18 , Gupta V et al 19 , SK Sharma et al 20 showed fever is the most common complaint found in 64%, 51% and 70.4% followed by weight loss in 47%, 43% and 62.5% respectively. But weight loss (47.8%) is the common complication followed by PUO (36%) and chronic cough (33%), chronic diarrhoea (32.3%) as per Deorukhkar et al 3 report.

In the current study out of 178 HIV positive cases 98 patients expressed the promiscuous behaviour and all are heterosexuals with more than one sexual partner. Among these subjects HIV seropositivity was 84%. The available literature is also stated that heterosexual route is the commonest route of HIV transmission 4,21,22,23 .

This study revealed that *Mycobacterium* is the most common OIs causing agent in HIV patients, *Mycobacterium* isolation was 51%, followed by *Candida* (39%) and *Cryptosporidium parvum* (24%). Our findings were comparable with previous studies. In the available literature *Mycobacterium* was isolated in 50%, 47%, 56%, 47%, 57% and 59% respectively in Biswas Jyotir may et al 24 , Vajapayee M et al 25 , Singh A et al 26 , Sanjeev Sinha et al 27 , Nilanjan Chakraborty et al 2 and Madkar SS et al 4 . In the current study both pulmonary tuberculosis (PT) and extra PT forms were seen (61, 11 cases) and mean CD4 count was 231 cells/ μ l. As per Moore et al 28 one of the earlier studies, the mean CD4 count was 261 cells / μ l in HIV positive patients with PT as OI and the reference range of CD4 counts were 250 to 500 cells / μ l according to Crowe et al 29

7 (Table: 5).

Candida infection is second (39%) common next to Mycobacterium. This is confirmed with the studies of Patel SD 5 & Madhkar SS 4 , reported candidiasis in 33% and 37.6% HIV positive patients respectively. Cryptosporidium parvum is the third (24%) common identified pathogen and very common diarrhoea causing agent. As per the Kulkarni et al 30 OIs were 41% when CD4 counts were 200-500 cells / μl and it was just 1% when the CD4 counts were > 500 cells / μl . The reason is very clear, as the CD4 cell count is decreased, the individual may prone to other infections due to lowering of immune system 31 V.

8 Conclusion

Findings of our study showed that OIs are very common in HIV patients. As immunity decreases, OIs can increase. Tuberculosis is the common OI followed by candidiasis, cryptosporidium diarrhoea. Diagnosis of OIs may not only decrease the mortality in HIV patients, but also increase the quality of life. Hence the diagnosis of OIs should be given prime importance in HIV sero positive patients. ¹



Figure 1:

IV.

Figure 2:

1

Figure 3: Table 1 :

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2

Figure 4: Table 2 :

3

Figure 5: Table 3 :

4

Age	1-10	11-20	21-30	31-40	41-50	51-60	61-70
HIV cases (%)	3 (1.7)	3 (1.7)	57 (32)	60 (34)	36 (20)	13 (7.3)	6 (3.4)

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[Note: Year () 2014 C © 2014 Global Journals Inc. (US)]

Figure 6: Table 4 :

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8 CONCLUSION

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