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Prevalence of Opportunistic infections in HIV patients on ART.

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Abstracts:
Background and Objective*: North eastern part of India, specially state of Manipur has a huge burden of people living with HIV / AIDS. Studies of prevalence of Opportunistic infections in this group of people is of utmost importance as their presence is a big factor affecting the morbidity and mortality in these group of people, and also to compare with trends in other parts of India and World. This study was conducted among the patients who were admitted to JNIMS Hospital.* ***Data and Methods:*** *A cross sectional study was undertaken among HIV - infected patients on ART, who were admitted between March 2017 and April 2019 at Jawaharlal Nehru Institute of Medical Sciences, Imphal,Manipur, India.* ***Results:*** *Majority of the patients around 60 % were in the age group from 40 to 60 years of age, followed by 32 % from age group 20 to 40 years. Male patient constitute 73 % and 27 % were female. Of the total 92 patients 47, which is 51.1 %, had either single or multiple OIs. Out of these 47 patients with OIs, 30 had CD4 count below 200 cells / cu. mm, comprising 64 % and 17 patients had CD4 count above 200 cells / cu. mm, constituting 36 % of the total patients having OIs.* ***Discussion:*** *This study observed that about 51.1 % of HIV patients on ART had one or more OIs. Tuberculosis and CMV were found to be the most common OIs. 47 patients were found to have OIs, of which 64 % patient had CD4 count < 200 cells / cu. mm and 36 % had CD4 count above 200 cells / cu. mm, clearly showing higher risk of OIs in low CD4 count patients.* ***Conclusion :*** *This study showed the prevalence of OIs among HIV patients on ART is still high, which requires timely diagnosis and treatment for the better management of the patients with HIV on ART.*

Key words: *HIV, Opportunistic infections, JNIMS, Manipur, India.*

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I. Introduction

North eastern part of India, specially state of Manipur has a huge burden of people living with HIV / AIDS. Studies of prevalence of Opportunistic infections (OI) in this group of people is of utmost importance as their presence is a big factor affecting the morbidity and mortality in these group of people. National adult (15 – 49 years) HIV prevalence is estimated at 0.26 % (0.22% – 0.32%) in 2015. In 2015, adult HIV prevalence is estimated at 0.30 % among males and at 0.22 % among females. Among the states / UTs in 2015, Manipur has shown the highest estimated adult HIV prevalence of 1.15 % followed by Mizoram (0.80 %), Nagaland (0.78 %), Andhra Pradesh and Telangana (0.66 %), Karnataka (0.45 %), Gujarat (0.42 %) and Goa (0.40 %).[1] The patient with HIV are at great risk of infection with opportunistic infections like Tuberculosis, Pneumocystis jiroveci, Cryptococcal meningitis, Penicilliosis, Candidiasis, Cytomegalovirus (CMV), Herpes simplex 1 and 2 etc.[2] Opportunistic infections (OIs) associated with HIV remain the single main cause of ill - health and death among HIV / AIDS patients in resource poor settings.[3,4.5] However, frequencies of specific OIs may vary in different countries and even in different areas within the same country.[6,7,8] The management of opportunistic infections (OIs) is an essential component of comprehensive HIV / AIDS treatment and care.[9,10]

However, the introduction of antiretroviral therapy (ART) has dramatically reduced the incidence of OI among HIV – positive people who have received ART. Incidence of OIs increases with declining CD4 counts and persons whose CD4 lymphocytes counts have increased in response

to antiretroviral therapy (ART) are at low risk for developing OIs, a circumstance suggesting a high degree or immune reconstitution as associated with ART. Early diagnosis and initiation of ART, chemoprophylaxis and treatment of OI are important for the control of HIV replication, disease progression and ultimately containment of the epidemic.[11] There are many studies reported on the pattern of OIs in HIV infected individuals, however, very few reports regarding the OIs with their CD4 count on ART. This study was conducted to throw light on this part of less explored area, on the prevalence of opportunistic infections in patients of HIV on ART.

II. Materials and Method

A cross sectional study was undertaken among HIV - infected patients on ART, who were admitted between March 2017 and April 2019 at Jawaharlal Nehru Institute of Medical Sciences, Imphal,Manipur, India. A total of 90 patients of HIV on ART were registered in this period of the study. A systematic master chart was prepared by entering the details of the history, clinical examination and investigations, which was checked and cross checked by various researchers separately.

Inclusion criteria:
All the HIV patients who were on ART for a minimum period of 3 months, admitted between March 2017 and April 2019 at Jawaharlal Nehru Institute of Medical Sciences, Imphal, were included in the study.

Exclusion criteria:
Patients who had never been on ART or incompliant to treatment and those who did not gave consent, were not included in the study.

Ethical considerations:
The ethical committee of Jawaharlal Nehru Institute of Medical Sciences, Imphal had given clearance to this study as it is a cross sectional study and non interventional. However, confidentiality were strictly maintained as per guideline given by the committee.

Statistical analysis:
All the statistical calculations were done using the SPSS version 20 for analyses of the data collected in the present study. Results were interpreted by using mean, standard deviation (SD), and simple frequency tables with percentages.

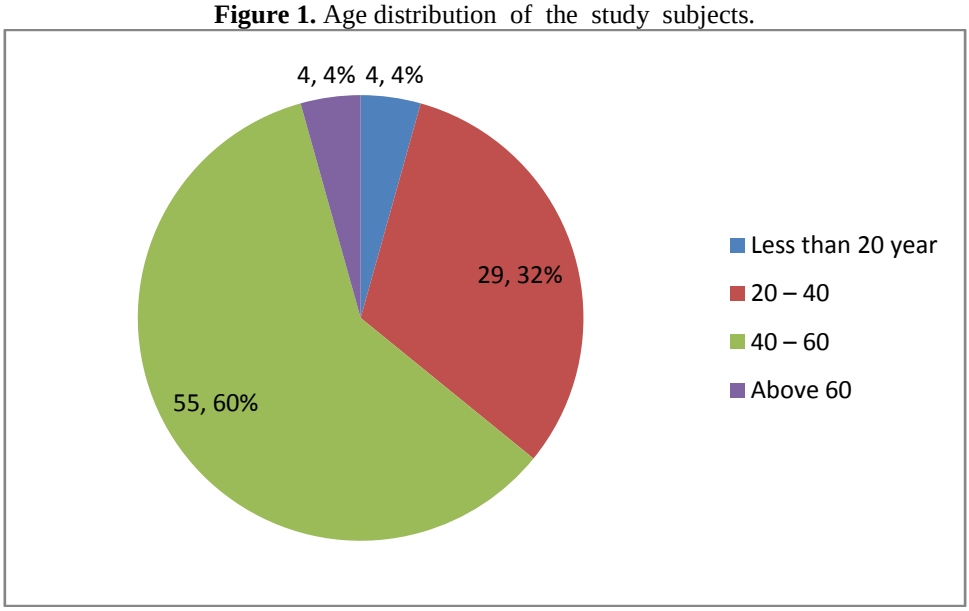
III. Result

Majority of the patients around 60 % were in the age group from 40 to 60 years of age, followed by 32 % from age group 20 to 40 years.

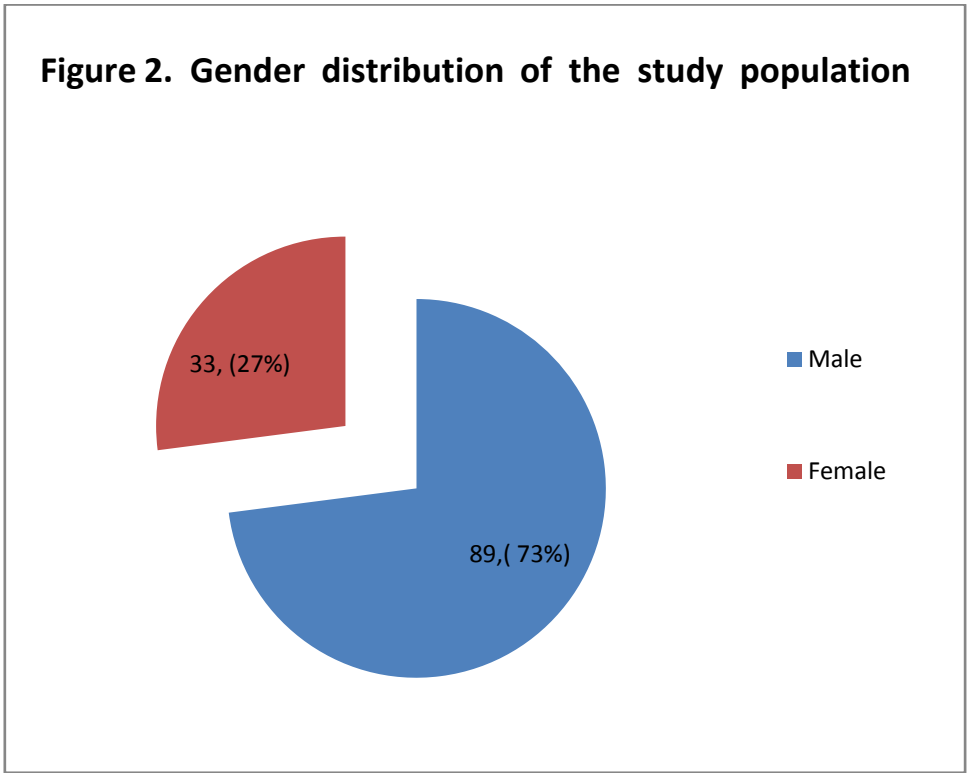
Table 1. Age distribution of the study subjects**.**

Age group	No of patients (out of 92).	Percentage (%)	Mean age ± SD
Less than 20 year	4	4 %	40.92391 ± 9.81503
20 – 40	29	32 %	
40 – 60	55	60%	
Above 60	4	4%	

Figure 1. Age distribution of the study subjects.



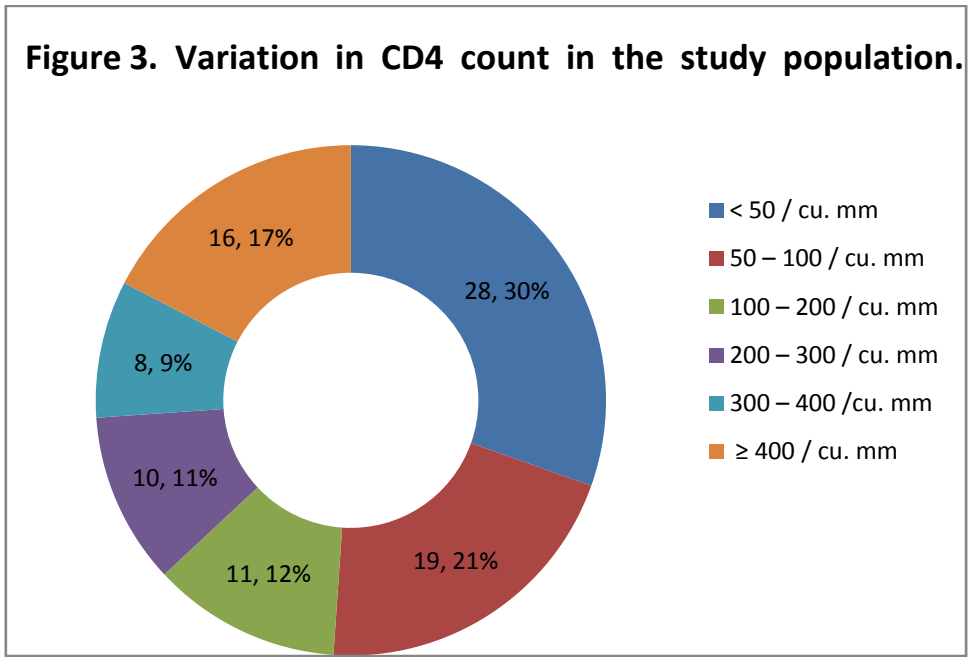
Majority of the patients in the study were male patients, comprising 73 % and 27 % were female.



The mean CD4 count in cells / cu. mm. were 186.9239 with a standard deviation of 190.76 in the present study. Of the total 92 patients 47, which is 51.1 %, had either single or multiple OIs. Out of these 47 patients with OIs, 30 had CD4 count below 200 cells / cu. mm, comprising 64 % and 17 patients had CD4 count above 200 cells / cu. mm, constituting 36 % of the total patients having OIs.

Table 2. Variation in CD4 count in the study population.

CD4 counts	No of patients (out of the 92 patients).	Percentage %	Mean ± SD
< 50 / cu. mm	28	40	186.9239 ± 190.76
50 – 100 / cu. mm	19	22	
100 – 200 / cu. mm	11	14	
200 – 300 / cu. mm	10	0	
300 – 400 /cu. mm	8	6	
≥ 400 / cu. mm	16	18	



In this study 8 types OIs were diagnosed, and occurrence of each individual OIs were 69. CMV (Cytomegalovirus) and Tuberculosis were found in 16, which is 23.19 % of the total opportunistic infections each. Followed by Cryptococcal meningitis in 11 patients, which is 15.94 %, Candidiasis were found in 10,that is 14.49 % of the total opportunistic infections in the study populations. 6 of them were HSV (Herpes Simplex Virus) constituting 8.7 %, Toxoplasmosis were found in 5 patients showing prevalence of 7.25 %, PCP (Pneumocystis jiroveci pneumonia) were found in 4 patients accounting for 5.8 %, and Peniciliosis were observed in only 1 patient , which is 1.45 % of all the OIs observed in the present study.

IV. Discussion

The present study found the prevalence and associated factors of OIs among HIV - positive patients on ART. This study observed that about 51.1 % of HIV patients on ART had one or more OIs. This finding was comparable to the 47.6 % reported in a study conducted in Taiwan.[12] This finding is also comparable to a study conducted in Ethiopia, where 48 % prevalence of OIs in patients of HIV on ART were reported.[13] However, it is higher than two other similar studies carried out in Ethiopia in Gondor and Debre Markos, which documented 19.7 % and 33.3 % prevalence, respectively.[14,15] This variations may be due duration of ART, individual immune variations and it also found that the risk of developing an OI for a person receiving ART is highest during the initial month of therapy.[16]

In the present study, majority of the patients around 60 % were in the age group from 40 to 60 years of age, followed by 32 % from age group 20 to 40 years. This finding is comparable to finding of previous studies done in other parts of the world.[13]

Majority of the patients in the study were male patients, comprising 73 % and 27 % were female. This finding is comparable to other studies done in other parts of the country[17] and world. However, in

contradictory to the findings in studies done in Ethiopia, where prevalence of HIV is higher in female patients.[13,14]

Table 3. Prevalence of opportunistic infections among HIV/AIDS patients on ART.

Opportunistic infections	**Number of patients (Out of 69)**	**Percentage (%)**
Tuberculosis	16	23.19
Cytomegalovirus(CMV)	16	23.19
Cryptococcal meningitis	11	15.94
Candidiasis	10	14.49
Herpes Simplex Virus(HSV)	6	8.7
Toxoplasmosis	5	7.25
Pneumocystis jiroveci pneumonia (PCP)	4	5.8
Peniciliosis	1	1.45

In this study 8 types OIs were diagnosed, and occurrence of each individual OIs were 69. CMV (Cytomegalovirus) and Tuberculosis were found in 16, which is 23.19 % of the total opportunistic infections each. This was comparable with a study conducted in Taiwan in which the prevalence of TB-related OIs was found to be 18.2%.[12] This finding is comparable with a report from Gondar, Ethiopia, which reported 50 % TB and candidiasis together.[15] High prevalence of CMV in this study is unique finding in the present study. Cryptococcal meningitis were seen in 15.94 % of the OIs in this study. This finding is higher than the prevalence reported in previous studies.[12,13,17] HSV (Herpes Simplex Virus) constituted 8.7 % of the OIs in the present study, which is comparable to previous studies done in the country[17] and other part of the world.[12,13,15] Toxoplasmosis were found to be prevalent at 7.25 %, this finding is higher than a similar study done in Northwest Ethiopia.[14] PCP accounted for 5.8 % prevalence in the present study, this finding is higher than other similar studies done in country[17] and abroad.[12,13,15]

Out of these 47 patients with OIs, 30 had CD4 count below 200 cells / cu. mm, comprising 64 % and 17 patients had CD4 count above 200 cells / cu. mm, constituting 36 % of the total patients having OIs in the present study. This finding is comparable to other studies done in different parts of the world, where they had documented that HIV - infected patient with CD4 counts of < 200 cells / cu. mm were more likely to develop OIs compared to those with CD4 counts of ≥ 200 cells / cu. mm.[13,14,17]

V. Conclusion

This study showed the prevalence of OIs among HIV patients on ART is still high, which requires timely diagnosis and treatment for the better management of the patients with HIV on ART. Different varieties of OIs are still likely to occur in these patient, so need of a regular follow up check up is very essential in such patients.

References

[1]. http://www.naco.gov.in/upload/2015%20MSLNS/HSS/India%20HIV%20Estimations%202015.pdf accessed on September 18, 2019.

[2]. Mulla SA, Patel MG, Vaghela G, et al.,A study of opportunistic infection in HIV-seropositive patients,Indian J Community Med 2007;32:208-9.

[3]. Kaplan JE, Hu DJ, Holmes KK, Jaffe HW, Masur H, De Cock KM. Preventing opportunistic infections in human immunodeficiency virus-infected persons: implications for the developing world. Am J Trop Med Hyg. 1996;55(1):1–11.

[4]. Holmes B, Losina E, Walensky R, Yazdanpanah Y, Freedberg K. Review of human immunodeficiency virus type 1-related opportunistic infections in Sub-Saharan Africa. Clin Infect Dis. 2003;36:652–62.

[5]. Mermin J, Were W, Ekwaru J, Moore D, Dawning R, Behumbiize P, Lule JR, Coutinho A, Tappero J, Bunnell R. Mortality in HIV - infected Ugandan adults receiving antiretroviral treatment and survival of their HIV - uninfected children: a prospective cohort study. Lancet. 2008;371:752–9.

[6]. Giri TK, Pande I, Mishra NM, Kailash S, Uppal SS, Kumar A. Spectrum of clinical and laboratory characteristics of HIV infection in northern India. J Commun Dis 1995;27:131-41.

[7]. Kaur A, Babu PG, Jacob M, Narasimhan C, Ganesh A, Saraswathi NK, *et al*. Clinical and laboratory profile of AIDS in India. J Acquir Immune Defic Syndr 1992;5:883-9.

[8]. Ayyagari A, Sharma AK, Prasad KN, Dhole TN, Kishore J, Chaudhary G. Spectrum of opportunistic infections in human immunodeficiency virus (HIV) infected cases in a tertiary care hospital. Indian J Med Microbiol 1999;17:78-80.

[9]. Joint United Nations Programme on HIV/AIDS (2006), "Overview of the global AIDS epidemic" (PDF)-2006 Report on the global AIDS epidemic. Retrieved 2019-09-18.

[10]. HIVAIDS-and-Development-in-India-2003-2007, Available from http:// www.sida.se/Documents/ Import/pdf.

[11]. Government of Karnataka, STO issues in HIV / AIDS, 2003 March. Page no: 1 - 13.

[12]. Sun HY, Chen MY, Hsieh SM, et al. Changes in the clinical spectrum of opportunistic illnesses in persons with HIV infection in Taiwan in the era of highly active antiretroviral therapy. *Jpn J Infect Dis*. 2006;59: 311–316.

[13]. Habtamu Mitiku, Fitsum Weldegebreal, Zelalem Teklemariam. Magnitude of opportunistic infections and associated factors in HIV-infected adults on antiretroviral therapy in eastern Ethiopia. HIV/AIDS - Research and Palliative Care downloaded from https://www.dovepress.com/ by 42.108.42.234 on 19-Sep-2019.
[14]. Moges NA, Kassa GM. Prevalence of opportunistic infections and associated factors among HIV positive patients taking anti-retroviral therapy in Debre Markos Referral Hospital, Northwest Ethiopia. *J AIDS Clin Res*. 2014;5:5.
[15]. Damtie D, Yismaw G, Woldeyohannes D, Anagaw B. Common opportunistic infections and their CD4 cell correlates among HIV-infected patients attending at antiretroviral therapy clinic of Gondar University Hospital, Northwest Ethiopia. *BMC Res Notes*. 2013;6:534.
[16]. Ledergerber B, Egger M, Erard V, et al. AIDS-related opportunistic illnesses occurring after initiation of potent antiretroviral therapy: the Swiss HIV Cohort Study. *JAMA*. 1999;282:2220–2226.
[17]. Shahapur PR, Bidri RC. Recent trends in the spectrum of opportunistic infections in human immunodeficiency virus infected individuals on antiretroviral therapy in South India. J Nat Sc Biol Med 2014;5:392-6.

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