

Common Opportunistic Infections and Their Demographical Information among HIV-infected Patients

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Abstract

Background: Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) continue to be the main global community health problem. Globally, there are 35.2 million people living with HIV/AIDS. India also has the world's third highest total HIV/AIDS burden, the prevalence of HIV infection is estimated to be 0.34% of the population, which translates to 2.31 million people living with HIV/AIDS and Karnataka is among high prevalent states. We took a study of patients attending the antiretroviral therapy (ART) center MIMS hospital, Mandya to know the different opportunistic infections (OIs) and their demographical information such as age and sex distribution and education level.

Materials and Methods: The study group had a total of 200 patients with HIV/AIDS among which 100 patients were on ART and 100 were not on ART (pre-ART patients). After obtaining the written informed consent, data were collected from patients by interview technique and secondary data from case records. Seriously, ill patients were excluded from the study. The data were scored and statistically analyzed using SPSS statistics.

Results: Patients in the age group 26–45 years suffered from pulmonary tuberculosis (PTB), extraPTB, candidiasis, diarrhea, bacterial infection, and herpes zoster, more commonly than the patients in the age group 1–25 years and 46 and above years. Patients with education status of 1–10th standard and illiterate patients suffered from OIs commonly compared to patients with education more than 11th standard.

Conclusion: OIs occur more frequently in the productive years of life and cause significant morbidity and mortality. Education level when it was more than 10th standard and above had fewer occurrences of OIs among HIV patients.

Key words: Demographic distribution, Human immunodeficiency virus/acquired immunodeficiency syndrome, Opportunistic infections

INTRODUCTION

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) continue to be the main global community health problem. Globally, there are 35.2 million people living with HIV/AIDS. India also has the world's third highest total HIV/AIDS burden, the prevalence of HIV infection is estimated to be 0.34% of

the population, which translates to 2.31 million people living with HIV/AIDS and Karnataka is among highest prevalent states (Park, 2011).^[1-4]

People with advanced HIV infection are vulnerable to infections called opportunistic infections (OIs) because they take advantage of the opportunity offered by a weakened immune system. Since the beginning of the epidemic, OIs have been recognized as common complications of HIV infection (Kanabus *et al.* 2006). More than 20 specific OIs have been associated with HIV infection (CDC classification system, 1986). HIV/AIDS-related OIs are associated with significant morbidity and mortality and virtually none can be eradicated, necessitating lifelong suppressive therapy after an acute episode.

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We conducted a study among 200 HIV/AIDS patients attending the antiretroviral therapy (ART) center at MIMS hospital, Mandya to know the common OI occurring in this part of the state and their demographical distribution.

MATERIALS AND METHODS

Study Subjects

The study group had a total of 200 patients with HIV/AIDS, among which 100 patients were on ART and 100 patients were not on ART (Pre-ART patients). The study included patients > 14 years and was conducted during the year 2015. The purposive sampling method was used.

The participants were given appropriate instructions and also after obtaining the written informed consent, data were collected from patients by interview technique and secondary data from case records. Seriously, ill patients were excluded from the study. Data collection was done in one session and each session lasted for about 30–45 min approximately. Then, the data were scored and statistically analyzed using SPSS (version 19) statistics.

RESULTS AND DISCUSSION

Tables 1 and 2 show the age, frequency, and percent for OIs of HIV/AIDS patients. The present study showed that 26–45 years age patients with HIV/AIDS commonly

suffered from increased frequency of OI – 142 patients (71.0%), followed by 46 and above years age patients with HIV/AIDS with OI – 36 patients (18.0%) followed by 0–25 years age patients with OI – 22 patients (11.0%).

In the present study, HIV/AIDS patients in the age group 26–45 years commonly suffered from more than two OIs, 37 patients (18.5%), pulmonary tuberculosis (PTB), 26 patients (13%), candidiasis, 23 patients (11.5%), diarrhea, 21 patients (10.5%), herpes zoster, 16 patients (8%), extraPTB (EPTB), 14 patients (7%), bacterial infection, 3 patients (1.5%), PCP, 1 patient (0.5%), and CMV retinitis 1 patient (0.5%).

The Figure 1 column graph reveals that the age (0–25, 26–45, 46, and above years) make a huge difference to the overall OIs. The above column graph clearly indicates that 26–45 years age patients with HIV/AIDS had higher PTB, EPTB, candidiasis, diarrhea, bacterial infection, herpes zoster OIs than 0–25, 46, and above year age group patients with HIV/AIDS.

Tables 3 and 4 show that education, frequency, and percent for OIs of HIV/AIDS patients. The present study showed that education level 1–10th standard patients with HIV/AIDS suffered more frequently from OI – 107 patients (53.5 %), followed by illiterate patients with HIV/AIDS (35.5%) followed by 11th standard and above patients with HIV/AIDS, 22 patients (11.0%).

Table 1: Distribution of age, frequency, and percent in HIV/AIDS patients

Age (Years)	Frequency	Percent
0–25	22	11.0
26–45	142	71.0
46 and above	36	18.0
Total	200	100.0

HIV: Human immunodeficiency virus, AIDS: Acquired immunodeficiency syndrome

Table 3: Distribution of education, frequency and percent in HIV/AIDS patients

Education	Frequency	Percent
Illiterate	71	35.5
1–10	107	53.5
11–above	22	11.0
Total	200	100.0

HIV: Human immunodeficiency virus, AIDS: Acquired immunodeficiency syndrome

Table 2: Distribution of age, opportunistic infections in HIV/AIDS patients

Opportunistic infections	Age (Years)			Total
	0–25	26–45	46 and above	
More than two OI	2	37 (18.5)	14	53
PTB	5	26 (13)	5	36
EPTB	2	14 (7)	2	18
Candidiasis	7	23 (11.5)	4	34
PCP	0	1 (0.5)	1	2
Diarrhea	3	21 (10.5)	6	30
Bacterial infection	1	3 (1.5)	1	5
Herpes zoster	1	16 (8)	3	20
CMV retinitis	1	1 (0.5)	0	2
Total	22	142 (71)	36	200

HIV: Human immunodeficiency virus, AIDS: Acquired immunodeficiency syndrome, OI: Opportunistic infections, PTB: Pulmonary tuberculosis, EPTB: Extrapulmonary tuberculosis

Table 4: Distribution of education, opportunistic infections in HIV/AIDS patients

Opportunistic infections	Education			Total
	Illiterate	1–10 (%)	11–above	
More than two OI	14	35 (17.5)	4	53
PTB	14	18 (9)	4	36
EPTB	7	9 (4.5)	2	18
Candidiasis	10	19 (9.5)	5	34
PCP	1	0 (0)	1	2
Diarrhea	15	12 (6)	3	30
Bacterial infection	2	2 (1)	1	5
Herpes zoster	7	11 (5.5)	2	20
CMV retinitis	1	1 (0.5)	0	2
Total	71	107 (53.5)	22	200

HIV: Human immunodeficiency virus, AIDS: Acquired immunodeficiency syndrome, OI: Opportunistic infections, PTB: Pulmonary tuberculosis, EPTB: Extra pulmonary tuberculosis

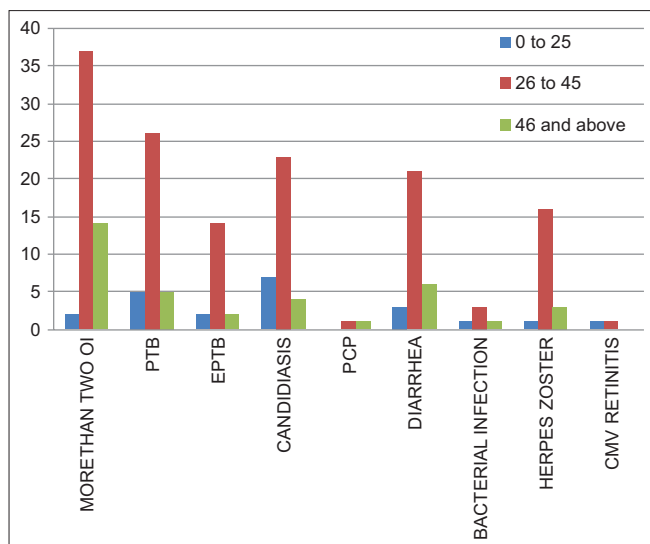


Figure 1: Distribution of age, frequency, and percent in human immunodeficiency virus/acquired immunodeficiency syndrome patients

The present study indicated that 1–10th standard patients with HIV/AIDS commonly suffered from more than two OIs – 35 patients (17.5%), candidiasis, 19 patients (9.5%), PTB, 18 patients (9.0%), diarrhea, 12 patients (6%), herpes zoster, 11 patients (5.5%), EPTB, 9 patients (4.5%), bacterial infection, 2 patients (1%), and CMV retinitis, 1 patient (0.5%). A similar study is reported from North-east India (Ripunjy and Ajit; 2015) where 59.3% of patients (48) had OIs where the education standard was 1–10.

The present study reveals overall age and education that patients with HIV/AIDS commonly suffered from more than two OI – 53 patients (26.5%), PTB, 36 patients (18.0%), candidiasis, 34 patients (17.0%), diarrhea, 30 patients (15.0%), herpes zoster, 20 patients (10.0%), EPTB, 18 patients (9.0%), bacterial infection, 5 patients (2.5%) PCP 2 patients (1.0%), and CMV retinitis 2 patients (1.0%). The most common OI being PTB, candidiasis, and diarrhea.

The Figure 2 column graph reveals that the education (Illiterate, 1–10th, 11, above standard) makes a huge difference to the overall OIs. The column graph clearly indicates that 1–10th standard patients with HIV/AIDS had higher occurrence of PTB, EPTB, candidiasis, diarrhea, bacterial infection, herpes zoster OIs than illiterate and 11 and above standard patients with HIV/AIDS.

Globally, 1/3rd of the people living with HIV/AIDS are coinfecting with *Mycobacterium tuberculosis* (Abeld, 2002). In India, 56% of AIDS patients have been reported to be suffering from tuberculosis (TB) (Sengupta *et al.*, 1997). TB accounts for about 13% of all HIV-related deaths

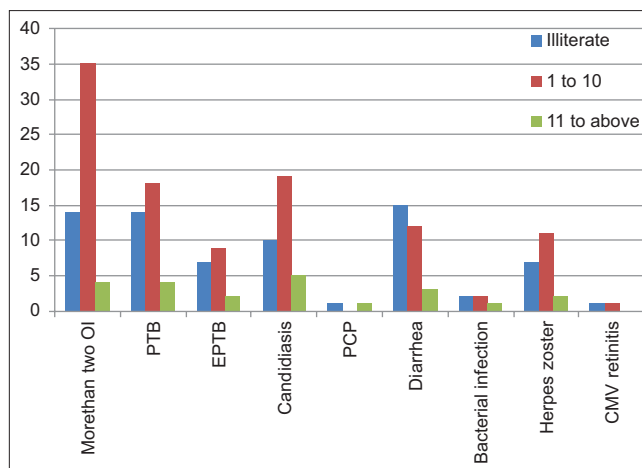


Figure 2: Education Illiterate - Distribution of age, frequency, and percent in human immunodeficiency virus/acquired immunodeficiency syndrome patients

worldwide (Ngowi *et al.*, 2008). A major cause of mortality and morbidity in HIV-infected people is OI, type of pathogen responsible for OI varies from region to region. Therefore, identification of the specific pathogen(s) is important for the management of such cases (Ayyagiri *et al.*, 1999). TB is the most frequently occurring OI among HIV/AIDS patients. Similar studies are also reported from Ayyagari *et al.* (36%), Takalkar *et al.* (52.3%), Sircar *et al.* (54.8%), and Singh *et al.* (56.0%).

Gangadhara and Ramesh (2014) studied 100 HIV-positive patients and found TB was the most common OI, followed by oral candidiasis, pneumocystosis, cryptococcal, and parasitic diarrhea. Saidu, Bunza, Abubakar, and associates conducted a survey of OIs in HIV seropositive patients attending major hospitals of Kebbi state, Nigeria and studied 606 HIV seropositive patients, a total of 374 (61.7%) were found infected with one or more of the OIs, the result of the OIs include STD/gonorrhoea (22.1%), trichomoniasis (10%), TB (6.7%), candidiasis (8.6%), hepatitis B (3.4%).

Anant *et al.* (2012) conducted a study of OIs where 110 HIV/AIDS patients were studied and found that the most common infection was PTB (52.3%), candidiasis (39%), cryptosporidial diarrhea (30.1%), and PCP (14.2%). Aggarwal *et al.* (2005) studied 100 HIV seropositive patients at the Department of Microbiology, Government Medical College, Amritsar, India and concluded that candidiasis, TB and cryptosporidiosis are the most common OIs.

Kashinath *et al.* (2014) studied 200 HIV seropositive patients at the Department of Medicine, BRIMS, Bidar, Karnataka and in the Department of Community Medicine, VIMS, Bellary and found that TB (50%) is the most

frequent OI followed by candidiasis (49%), PCP (16%), and others. The respiratory system was the most common system involved in the OIs.

The present study revealed that TB (PTB and EPTB) infection is the predominant OI identified, with a prevalence of 27.0% (54/200), candidiasis 17.0% (36/200), and diarrhea 15.0% (30/200). This finding is comparable with studies from India which revealed TB as a major OI identified (Vajpayee *et al.*, 2003; Dominic *et al.*, 2008).

However, another study conducted in India revealed that oral candidiasis (53.43%) and chronic diarrhea (47.5%) are the most common OI problems (Kallol, *et al.* 2011).^[5-8]

CONCLUSION

OIs occur frequently in the productive years of life and cause significant morbidity and mortality. Education level when it was more than 10th standard and above had less occurrence of OIs among HIV patients. They had

more awareness about the disease better compliance with treatment.

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