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PROFILE OF OPPORTUNISTIC INFECTIONS IN HIV SEROPOSITIVE PATIENTS: AN OBSERVATIONAL STUDY

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Abstract

Introduction: Human immunodeficiency virus (HIV) virus, causative agent in acquired immunodeficiency syndrome, is fast becoming a major threat in the Indian subcontinent, with an estimated 3.7 million persons being infected with HIV. HIV infection is complicated by various opportunistic infections (OIs) such as tuberculosis (TB), candidiasis, herpes zoster, Pneumocystis, cytomegalovirus (CMV) etc. This study carried out to know the clinical profile opportunistic infections in HIV seropositive patients. The aim of this study to determine the opportunistic infections in adult AIDS patients.

Material and methods: A total of 200 patients were tested for opportunistic infections in HIV patients. All the specimens were processed as per standard procedures to detect opportunistic infections.

Results: 200 cases that satisfied the inclusion criteria were considered for the study. Of the 200 individuals analyzed, 133 (66.5%) were males and 67 (33.5%) were females. The maximum number of patients who had opportunistic infections fell in the age group of 25-35yrs, 94 (47%), followed by the age group below 25 yrs, 53 (26.5%) and most of the occupants, who harboured opportunistic infections were labourer (49.5%), n=49, followed by driver 17.5% and then housewives 13%. The tuberculosis is the most frequent opportunistic infections accounting for 52.5% of all opportunistic infections, followed by candidiasis in 50.5% of cases and followed by pneumocystosis in 17%, cryptosporidiosis in 10.5%.

Conclusions: Respiratory system was the most common system involved by OIs. Early diagnosis and prompt treatment of opportunistic infections is important before development of severe immunodeficiency to prevent serious and fatal outcome.

Keywords: HIV/AIDS, Opportunistic Infections, Tuberculosis, Candidiasis

Introduction

AIDS (Acquired Immuno Deficiency Syndrome) is a fatal illness caused by a retrovirus known as Human Immunodeficiency virus (HIV). This disorder was first recognized in the United States in 1981 among homosexual men. In India, first case of HIV disease was documented in 1986. Although it is estimated that there are 4 million cases of HIV infection in India, the general consensus is that there are growing localized epidemics. The challenge to the country's infrastructure to respond to this epidemic and the issues of stigma and discrimination faced by HIV-infected persons appear daunting. After initial denial, the government set up the National AIDS Control Organization, which initiated a large-scale surveillance program for prevalence of HIV infection throughout all the states of India.[1]

Opportunistic infections (OIs) are the most common complication of human immunodeficiency virus (HIV) infection.[2-4] OI cause significant morbidity and mortality in people with HIV infection.[5-6]

The identification of pathogens responsible for OI is very important in managing the HIV infected individual. The spectrum of OI of a particular locality should be known to prevent these infections by giving adequate prophylaxis. The antiretroviral therapy (ART) has reduced the incidence of OI among HIV infected individuals; however the efficacy of the ART depends on the patients adherence to the regimen of drugs, stage at which treatment was started, drug resistance and other factors.[7]

At present the initiation of prophylactic therapies against opportunistic pathogens is mainly based on the absolute CD4 count, as it is generally accepted as the best indicator of the immediate state of immunologic competence of the patient with HIV infection.[8] The relative frequencies of specific OIs may vary in different countries and even in different areas within the same country.[9-11]

Knowledge of the most common OI of that geographical area will help in implementing the preventive measures against that pathogen. Tuberculosis is the most common OI among HIV infected individuals of Guatemala, Sub-Saharan Africa[12] and Bangladesh.[13] Pneumocystis carinii

pneumonia is most common cause of OI in Malaysia[14] Hong Kong[15] China.[16] There are many reports available regarding the pattern of OIs in HIV infected individuals, but very few reports regarding the OIs with their CD4 count and ART. Hence we are reporting the recent trends in the spectrum of OIs and their respective CD4 count among patients on ART.

Material and methods

This is observational study of clinical profile of opportunistic infections in HIV seropositive patients was carried out at Indira Gandhi Institute of Medical Science, Patna Bihar, India from Oct 2018 to Sep 2019. Total 200 patients, with known HIV positive status having OIs or patients with different OIs admitted to the hospital and later found to have HIV positive status were included in the study.

Inclusion criteria

- All patients who were diagnosed seropositive HIV positive will be included in the study.

Exclusion criteria

- Patients of HIV who are already on ART therapy.
- Patients harboring opportunistic infections who are immunosuppressed because of causes other than HIV.
- Patients who don't consent for being included in the study.

All procedures and interventions have been established only after obtaining adequate/ appropriate consent in a prescribed form. Ethical clearance has been obtained from the Ethical clearance committee chaired by the Principal Indira Gandhi Institute of Medical Science, in a prescribed certificate. Upon enrollment in the study, written consent was obtained and duly signed by the patients in a prescribed format.

After inclusion in the study in each case a thorough history was taken followed by a detailed examination and the observations were recorded.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 20 (SPSS Inc., Chicago, Illinois, USA).

Descriptive statistics included computation of percentages, means and standard deviations were calculated.

Results

200 cases that satisfied the inclusion criteria were considered for the study. Of the 200 individuals analyzed, 133 (66.5%) were males and 67 (33.5%) were females.

The incidence of OIs was significantly high in patients who were less educated and this directly indicates the impact of level of education on the transmission of the disease, as education is directly related to the level of awareness. Table 1 show the maximum number of patients who had opportunistic infections fell in the age group of 25-35yrs, 94 (47%), followed by the age group below 25 yrs, 53 (26.5%). No patients were found in the age group above 60 yrs. Table 1 shows most of the occupants, who harboured opportunistic infections were labourer 49 (49.5%), followed by driver 35 (17.5) and then housewives 26 (13%). It is evident from the table 2 that tuberculosis is the most frequent opportunistic infections accounting for 105 (52.5%) of all opportunistic infections, followed by candidiasis in 101 (50.5%) of cases and followed by pneumocystosis in 17%, cryptosporidiosis in 10.5%.

Table 1: Demographic profile of the study population

Variables	N= 200	% age
Age		
Less than 25	53	26.5
25-35	94	47
35-45	41	20.5
Above 45	12	6
Gender		
Male	133	66.5
Female	67	33.5
Education		
Illiterate	52	26
Primary -10^{th}	82	41.5
10^{th} -12^{th}	41	20.5
Graduate & Postgraduate	25	12.5
Marital status		
Married	111	55.5
Unmarried	61	30.5
Separated /widower	28	14
Occupation		
Labourer	99	48.5
Drivers	35	17.5
Service men	17	8.5
Business men	23	11.5
Housewife	26	13

Table 2: Distribution of opportunistic infections in the study population

opportunistic infections	N= 200	**Frequency**
Tuberculosis	105	52.5
Candidacies	101	50.5
Pneumocystosis	34	17
Cryptococcosis	21	10.5
Cryptosporidiosis	16	8
Strongyloidiasis	8	4
Isosporiasis	11	5.5
Toxoplasmosis	9	4.5
CMV retinitis	8	4
PML	8	4
Herpes	15	7.5
Molluscum contagiosum	14	7
Pneumococci	7	3.5
Scabies	3	1.5

Discussion

In the present study total 200 HIV positive patients were included. Out of these patients, 133 were males (66.5%) and 67 were female (33.5%) Chakravarty J et al., (80.8% male) and Kumarsamy N et al. (68% male).[17,18] The majority of patients were in the age group of 25-35 years, Chakrabory N et al., (55% were in 31-44 yrs.) and Singh A et al., (54% were in 31- 40 yrs).[19,20] This is consistent with other studies reported from India and abroad.[21,22] It was observed that the frequency of OI was highest in the sexually active age group of society. This indicates a trend of young and productive generation being affected a reflection of the devastating effects India will face as this work force is affected.

The incidence of OIs was significantly high in patients who were less educated and this directly indicates the impact of level of education on the transmission of the disease, as education is directly related to the level of awareness.[23]

Majority of studied population were labourer which is comparable to that reported by Chakravarty J et al, (majority were migrant worker).[17] This was due to illiteracy and low level of awareness about transmission of HIV amongst them. Numerous OIs occur in HIV infected patients due to down regulation of the immune system. In the present study, it was found that TB was the most frequent OI accounting 52.5% of all infections followed by candidiasis in 50.5% of cases. Similarly in a study of Sharma and Vajpayee.[24,25] TB was most common OI followed by candidiasis, whereas contradictory to this in a study of Giri[26] and Singh[27] candidiasis was the most common followed by TB. The high incidence of Candidiasis in the present study can be explained by the fact that it is the second most common AIDS defining illness after tuberculosis in advanced stage of HIV infection in developing country like ours. Out of 58 cases of Candidiasis, disseminated Candidiasis was found in 6 patients 10.34% (6/58) which is in accordance with reports by other workers Sinha S et al.[28]

In the present study, Herpes zoster infections were seen in 7.5% of total 200 patients. However higher incidence (11.2-20%) has been reported by Sivayathorn A et al.[29] The OIs found in descending order of their prevalence with pneumocystosis, cryptosporidiosis, cryptococcal meningitis etc. The prevalence of different OIs varies in different studies like Vajapyee M et al, Sing A et al.[25,27] Though the Toxoplasma gondii has been described as one of the most common opportunistic infection in AIDS patients, in the present study we found only one case of cerebral toxoplasmosis (4.5%) which is in accordance with findings reported by Ponniah P et al.[30]

Conclusion

It can be concluded from the results of this study that the major cause of admission of HIV patients still remains to be opportunistic infections. Human immunodeficiency virus-TB co infection is a serious problem worldwide but especially of concern in India where background rates of TB is highest in the world. In India, the most common OI among people with HIV infection is pulmonary TB. Hence respiratory system is most commonly involved as observed in our study.

The male gender is the important factors in HIV-AIDS infection. Candidiasis as opportunistic infection is the first indication of immunodeficiency followed by tuberculosis and Cryptosporidium parvum infection.

Early diagnosis and prompt treatment of opportunistic infections is important before development of severe immunodeficiency to prevent serious and fatal outcome

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