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Original Research Article

Clinical profile of opportunistic infections in HIV seropositive patients attending tertiary centre, Raichur, India

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ABSTRACT

Background: According to Karnataka state HIV statistics, HIV positivity among general clients tested at ICTCs, Raichur (4.9%) had third highest proportion of HIV positive cases. Authors decided to focus on opportunistic infections (OIs) in HIV patients of Raichur district since they contribute to the mortality and morbidity.
Methods: It's a cross sectional, hospital-based study with 100 patients with HIV infections as per NACO guidelines with features of OIs were included in study.
Results: In this study, 77 males (77%), 23 female (23%) patients with 58% (n=58) of them in 30-39yrs age group and 21% (n=21) in 20-29yrs were seen. Majority of cases were laborers (47%) and less educated (n=55). Symptoms included loss of appetite (76%) n=76, fever (72%) n=72, cough (55%) n=55 and diarrhoea15% (n=15). The respiratory system was most frequently involved by opportunistic infections and accounted for 56% (n=56) of the total cases and clinically consolidation/crepitation was most frequent presentation accounting for 75% (n=42). Tuberculosis was most common OI (55%) with combined pulmonary and extra pulmonary in 56.37% (n=31), tubercular meningitis and tubercular lymphadenopathy each accounting for 30.77% (n=12) amounted majority, with pleural effusion 20.52% (n=8). Median CD4+T cell count was 217.72 in TB. Candidiasis is second most common OI with 49% (n=49), median CD4 count being 190.07. Other OIs observed were pneumocystosis 16% (n=16), cryptococcosis 2% (n=2).
Conclusions: Most common OI in the study was tuberculosis (in extra pulmonary TB meningitis and TB lymphadenitis) followed by Candidiasis, Pneumocystosis and Cryptococcosis.

Keywords: HIV, Opportunistic infection, TB

INTRODUCTION

AIDS, acquired immune deficiency syndrome is a fatal illness caused by retrovirus, HIV virus. It slowly breaks down body immunity there by making body vulnerable to various opportunistic infections.

The current estimate of the number of cases of HIV infection worldwide is 36.9million, and among them 21.7 million are on HIV treatment. The number of new infections in 2017 is 1.8 million and 940,000 AIDS related deaths as per UNAIDS 2018 global report.[1]

It is estimated that 21.40 lakhs people are infected with HIV of which 41% are female. With 3.30 lakhs, Maharashtra had the highest number of PLHIV contributing 15% to total PLHIV size in the country. Andhra Pradesh (2.70 lakhs), Karnataka (2.47 lakhs), and Telangana (2.04 lakhs) are the other states with PLHIV numbers in the range of 2-3 lakhs.[2]

Karnataka state with its population crossing 6.68 crore has an estimate of 2.47 lakhs PLHAs with an adult prevalence of 0.47%.[3] The population of Karnataka state is about 5.2% of the population of India, and there are an estimated 5000 new infections in 2017.[2]

Raichur district with its population of more than 19 lakhs is spread over geographical area of 8442 square kilometer. According to Karnataka state HIV statistics, 4.9% of all PLHAs are from Raichur district alone, third highest proportion of HIV positive case.[3]

HIV infection is characterized by an insidious deterioration of the immune system. There is quantitative and proportional decrease in CD+4-T cell over a period of years with development of AIDS. The degree of immunodeficiency associated with HIV infection is defined by the onset of opportunistic infection closely correlate with CD4+T cell count. HIV infection is complicated by various opportunistic infections like tuberculosis, PCP, cryptococcosis, toxoplasmosis, candida etc. These influence morbidity and mortality.[4]

Opportunistic infections (OIs) are gaining its importance in becoming predominant cause of mortality even with wide spread use of ART therapy and with prophylaxis to these infections. Many infections mimic similar clinical presentation and pose diagnostic challenge.

With such significance, studies regarding opportunistic infections (OIs) are lacking especially in critical district like Raichur, Karnataka. With this background, the present study was undertaken to find the clinical profile of opportunistic infection in HIV disease.

METHODS

This is cross sectional, hospital based observational study of, clinical profile of opportunistic infections in HIV patients prior to the start of antiretroviral therapy, was carried out at Navodaya Medical College, Hospital and Research Centre Raichur. Approximately 100 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 HIV positive according to NACO guidelines and with opportunistic infections 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.

Diagnosis of HIV infection in the included cases was done at ICTC (Integrated Counseling and Testing Centre) as per the NACO guidelines by three different methods Dotblot (comb AIDs), Immunochromatographic test (Pareekshak) and Immunoblot (Pareekshak). Those having reactive test results at other laboratories were sent to the ICTC for confirmation. Informed consent was taken in each case as per NACO ethical guidelines. Children below the age of 15years were excluded from this study.[5,6]

Detailed history, clinical examination and investigations were done as necessary like CD4+T cell count, CBC, ESR, blood culture, arterial blood gas analysis, HBsAg, Anti-HCV antibody, urine routine and culture, stool routine and culture, mantoux test, sputum AFB, CT scan brain, CT thorax, MRI brain, MRI spine, fundoscopy, peritoneal fluid/Pleural fluid/CSF analysis, CSF for Indian Ink staining, CSF PCR, FNAC of lymphnode, ELISA for toxoplasma IgG and IgM, Latex Agglutination for cryptococcal antigen, oral scraping for microscopy of fungal element, upper GI endoscopy. CD4+T cell count was done by Partec CD4 flow cytometer using flow cytometry.[7-9]

RESULTS

100 patients who were documented HIV positive, who had opportunistic infections and who were admitted to various medicine wards in Navodaya Hospital Raichur were included in the study. There was higher proportion of males, n=77 (77%) as compared to females, n=23 (23%). The male to female ratio was 3.34:1. The maximum number of patients who had opportunistic infections fell in the age group of 30- 39yrs, n=58 (58%), followed by the age group 20-29yrs, n=21 (21%). No patients were found in the age group above 60yrs.

Table 1: HIV infection among different occupants.

Occupation	No. of cases	Percentage
Labourer	47	47%
Drivers	15	15%
Service men	7	7%
Business men	9	9%
CSWs	4	4%
Housewife	18	18%
Total	100	100%

Table 1 shows most of the occupants, who harboured opportunistic infections were labourer (47%), n=47, followed by housewives (18%) n=18. Drivers accounted for 15% (n=15) of the total cases. The incidence of opportunistic infections was significantly high (55%), n=55, in patients who were less educated, that is below tenth standard. whereas it was mere 11% (n=11) in those who were highly educated.

In the present study, the most common symptoms at presentation were loss of appetite (76%) n=76, fever

(72%) n=72, weight loss (71%) n=71, cough (55%) n=55, whereas diarrhea was seen in only 15% (n= 15) of the cases. Those patients who were febrile at presentation had history of fever mostly of more than one-month duration (68%) n= 68 and only 4% (n=4) of the total cases accounted for fever of less than 1 month duration. Most of the patients with opportunistic infections at presentation had weight loss more than 10% of their body weight (46%) n=46 where as in 29% (n= 29) of the patients there was no history of weight loss.

Table 2: Clinical profile of respiratory system manifestation.

Manifestations	No. of cases	Opportunistic infection	Percentage	P value
Pneumonia	42 (75%)	Tuberculosis (n= 25)	59.52%	<0.0001
		Pneumocystis (n=15)	35.72%	
		Pneumococci (n= 2)	4.76%	
Pleural effusion	08 (14.28%)	Tuberculosis (n=08)	100%	
Cavity	01 (1.78%)	Tuberculosis (n=01)	100%	
Fibrosis	05 (8.92%)	Tuberculosis (n=05)	100%	

Those with diarrhoea at presentation of opportunistic infections had a duration of >1 month in 13% (n=13) of the cases.

The respiratory system was the most frequent system involved by opportunistic infections and accounted for 56% (n=56) of the total cases and clinically consolidation/crepitation was the most frequent presentation accounting for 75% (n=42) of the total respiratory cases.

This was followed in sequence by central nervous system involvement (12%) n= 12, cardiovascular system (05%) n=05, genitals (10%) n=10, skin (12%) n=12, and abdomen in 05% (n=05) of the total cases.

Table 2 depicts that the most common manifestation of opportunistic infections in respiratory system in the present study was pneumonia accounting for 42 cases of which tuberculosis (n=25) was the most frequent opportunistic pathogen accounting for 59.52% of cases and pneumocystis in 35.72% (n=15).

All the cases of pleural effusion, fibrosis and cavity were attributable to tuberculosis. Patients presenting with pneumonia as a part of opportunistic infection had tuberculosis as most frequent infection as compared to others (p= <0.0001) with statistical significance.

Table 3: Tuberculosis (n= 55).

Clinical profile	No. of cases	%	P-valve
Only pulmonary	16	29.09%	<0.0001
Extrapulmonary	08	14.54%	
Both	31	56.37%	

The Table 3 depicts that the most frequent manifestation of tuberculosis was combined pulmonary and extra pulmonary and in the present study accounted for 56.37% (n=31) of the total cases and was statistically significant (p= <0.0001).

The most frequent extra pulmonary manifestation present study was tubercular lymphadenitis and TB meningitis accounting for 31% (n=12) each as shown Figure 1 remaining are accounted for by pleural effusion (20.52%) n=08, pericardial effusion (10.25%) n=04 and by ascites (7.69%) n=03.

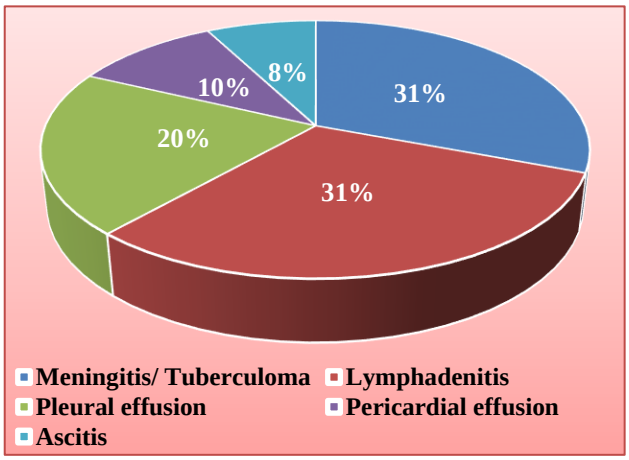

Figure 1: Among the extra pulmonary tuberculosis, the frequencies of various manifestations are as follows.

It is evident from the Figure 2 that tuberculosis is the most frequent opportunistic infections accounting for 55% (n= 55) of all opportunistic infections, followed by candidiasis in 49% (n=49) of cases and followed by pneumocystosis in 16%, cryptosporidiosis in 7%.

The Table 4 shows that the mean CD 4+ cell count in tuberculosis was 217.72/microL and in Candidiasis 190.07/ micro L, and in cryptococcosis 72.89/micro L, in pneumocystosis is 145.73/micro L.

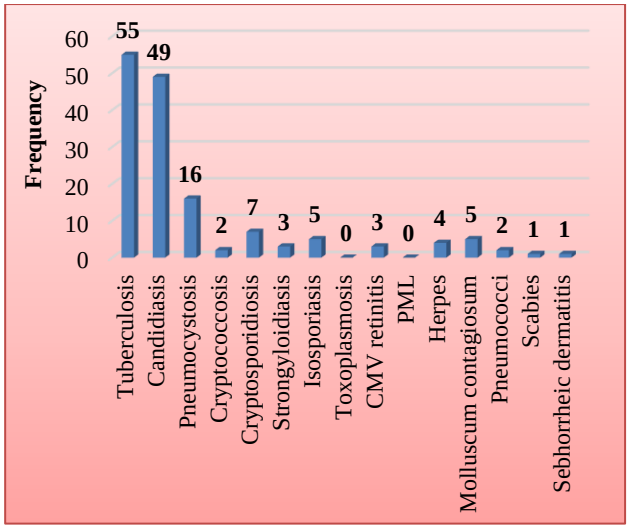

Figure 2: Frequency of various opportunistic infections (OI).

DISCUSSION

Among 100 hospitalized patients, 77% were male and 23% female which is comparable with other studies conducted by Chakravarty J et al, (80.8% male) and Kumarsamy N et al (68% male).[10,11]

Most of the patient belonged to the age group 30-39yrs. (58%) as compared to Chakrabory N et al, (55% were in 31-44 yrs.) and Singh A et al, (54% were in 31-40yrs.).[12,13]

Majority of studied population were labourer which is comparable to that reported by Chakravarty J et al, (majority were migrant worker).[10] This was due to illiteracy and low level of awareness about transmission of HIV amongst them.

At the time of hospitalization majority of patient were presented with more than one symptom like fever, loss of appetite, weight loss, which is similar to study done by Sharma SK et al, that most common presentation was fever (71%) and weight loss (65%).[14] But study done by Chakravarty J et al, is different in which majority patient diarrhoea (43.9%) and cough (40.3%).[11]

The most common OI was tuberculosis (55%) with combined pulmonary and extrapulmonary as most frequent presentation. Among extrapulmonary, Tubercular meningitis and lymphadenopathy shared equal presentation. The second most common OI was candidiasis (49%), with most cases suffering from oral candidiasis.

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.[13,15]

The mean CD4 count for different OIs in this study was observed to be 190/microL for candidiasis, 217.72/microL for tuberculosis and 212/microL for cryptosporidiosis. But this observation was different than the study conducted by Vajapyee M et al, that median CD4 count for candidiasis was 189/µc, tuberculosis was 189.[15] In the present study the CD4 count is found to be below 72.89/microL in cases of cryptococcosis.

CONCLUSION

The incidence of opportunistic infection is higher in male as compared to female. HIV with opportunistic infections is the disease of youth and is prevalent in those who are sexually active. In present study setup most, frequent opportunistic infections are accounted by tuberculosis and candidiasis. There is a direct correlation between the values of CD4 count and the severity of the opportunistic infections, hence indicating the level of immunity and the severity of the disease. The clinician should take every possible effort for the work up of fever, to establish the diagnosis of tuberculosis, which happens to be the most common OI in present study.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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