

Gender Based Profiling of Opportunistic Infections in AIDS Patients in Tertiary Care ART Centre of A Cosmopolitan City of Central India

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ABSTRACT

Introduction: In HIV/AIDS, Women appeared to have more rapid progression of illness than men and to present with a different constellation of opportunistic infections than men. Objective of the study was to compare the gender difference in age distribution, marital status, presenting symptoms, Lab parameters and the AIDS defining infections and the opportunistic infections in men and women with AIDS.

Material and Method: The study was carried out among 156 male, 82 female, and 1 transgender who fulfilled the NACO guidelines for diagnosis of AIDS.

Results: The most frequent AIDS Defining Infections were tuberculosis (42.25%), and candidiasis (22.6%). In contrast to the western literature where *Pneumocystis jiroveci* pneumonia was commonest AIDS defining infections, we found that TB was commonest in our study. This is similar to other studies in India and other developing countries. Other conditions seen in this study were Herpes simplex (6.28%), nonspecific dermatitis (2.51%), recurrent bacterial pneumonia (1.67%) Pelvic inflammatory disease (1.25%), Cryptococcal meningitis (0.8%), CMV retinitis (0.4%) and non specific lymphadenopathy (0.4%). Pulmonary Tuberculosis (P = 0.001), Tubercular meningitis (P = 0.003) were significantly higher in males compared to females. Herpes simplex (P value 0.007) and non specific dermatitis (P value 0.01) showed statistically significantly higher in females compared to males in occurrence rate. Pelvic inflammatory disease is specific for females (p=0.01).

Conclusion: Pulmonary Tuberculosis and Tubercular meningitis were significantly higher in males compared to females. Herpes simplex and non specific dermatitis showed statistically significantly higher in females compared to males in occurrence rate.

Keywords: AIDS, CMV retinitis, Cryptococcal meningitis, Opportunistic infections, *Pneumocystis jiroveci*

INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) -is caused by retrovirus known as HIV (Human Immunodeficiency Virus), which breaks down the body immune system leaving the victim vulnerable to a host of life threatening opportunistic infections, neurological disorders or unusual malignancies.

About 95% of all HIV infected people are living in the developing countries. The pace of the epidemic in India is accelerating. In India a cumulative total of 20,88,642 cases of AIDS had been reported till the year 2011.¹ The UN (United Nations) Population Division projects that India's adult HIV prevalence will peak at 1.9% in 2019. During 2000-15, the UN projects 12.3 million AIDS deaths and 49.5 million deaths during 2015-50.²

The NACO statistics state that one in every 4 cases reported

is a woman. The increasing HIV prevalence among women is of great consequence, as this will cause an increase in number of pediatric HIV cases. The HIV epidemic is greatly impacted by issues related to sex and gender, ranging from susceptibility and vulnerability to infection, prevention behaviors, disease progression and manifestations, access and response to treatment and vaccines, and pharmacology. Conducting sex comparisons within research studies is important to delineate sex differences or similarities.^{3,4}

Concerns about sex-based differences in the course of HIV infection were expressed early in the epidemic. Women appeared to have more rapid progression of illness than men and to present with a different constellation of opportunistic infections than men.

AIDS defining conditions are common in these patients and more so in women. Hence there is a need to know the spectrum of AIDS Defining conditions in women and to compare and see if there is any gender difference in these manifestations. This will help to plan and execute gender specific approach and better care for these patients.

MATERIALS AND METHODS

Setting of the Study

The study was done prospectively from September 2010 to September 2011 at N.S.C.B. Medical College Jabalpur. N.S.C.B. Medical College Hospital is a tertiary care referral centre. The study was carried out among 156 male, 82 female, and 1 transgender who reported to ART centre N.S.C.B. Medical College, Jabalpur and who fulfilled the NACO guidelines for diagnosis of AIDS. The study protocol was approved by the institutional review board.

Study Design

Patients who fulfilled the study criteria were grouped into two categories based on their gender. This study consisting of 156 male 82 female and 1 transgender was undertaken to compare the gender difference in age distribution, marital status, presenting symptoms, Lab parameters and the AIDS defining infections.

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How to cite this article: Vibhuti Thakur, Ashok Thakur, Shiv Shankar Sharma, Satish Saroshe. Gender based profiling of opportunistic infections in AIDS patients in tertiary care ART centre of a cosmopolitan city of central India. *International Journal of Contemporary Medical Research* 2016;3(3):627-630.

Inclusion Criteria

- HIV positive individuals by ELISA
- Age group > 15 yrs including both male and female
- Patients had to give oral consent

Exclusion Criteria

- Individuals with HIV1 and 2 non reactive.
- Age below 15 yrs.

Methods of Collection of Data

Patients who fulfilled the NACO criteria for diagnosis of AIDS³ were included in the study. Oral consent was obtained from the patients. Data on the patients was collected according to the Performa. We did the required lab tests to diagnose the suspected infections. Patients underwent a detailed physical examination and routine laboratory investigations. Laboratory investigations for the diagnosis of appropriate opportunistic infections were performed on the basis of clinical findings.

STATISTICAL ANALYSIS

The Statistical software SPSS 11.0 and Systat 8.0 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc. Chi-square and Fisher exact test have been used to test the significance of proportions of diagnosis between male and Female.

RESULTS

The study was done prospectively from September 2010 to September 2011 at N.S.C.B. Medical College Jabalpur. N.S.C.B. Medical College Hospital is a tertiary care referral centre. The study was carried out among 156 male, 82 female, and 1 transgender who reported to ART centre N.S.C.B. Medical College, Jabalpur. This study focuses on the gender differences in AIDS defining infections in a tertiary care referral centre. There were 239 cases out of which 156 male, 82 female and 1 transgender. 65.27% patients were males, 34.30% were females, and 0.41% transgender. This finding is consistent with the NACO statistics for AIDS. In the HIV sentinel surveillance, 2003, males account for 73.5% of AIDS cases and females 26.5%. The ratio being 3:1. Fever was the commonest presenting symptom (57.32%) in both males and females, 61.53% of males and 48.78% females presented with fever, the major symptoms seen among the AIDS patients were weight loss (33.4%), asthenia (30.1%) and chronic diarrhea (29.70%) were common symptoms.

Gender And Aids Defining Infections

The most frequent AIDS Defining Infections were tuberculosis (42.25%), and candidiasis (22.6%). The other conditions seen in this study were Herpes simplex (6.28%), non-specific dermatitis (2.51%), Recurrent bacterial pneumonia (1.67%) Pelvic inflammatory disease (1.25%), Cryptococcal meningitis (0.8%), CMV retinitis (0.4%) and non specific lymphadenopathy (0.4%).

The disease pattern in our study has demonstrated some gender differences. Herpes simplex (12.2% vs. 3.2%), recurrent bacterial pneumonia (3.6% vs. 0.66%), and non specific dermatitis (6% vs. 0.64%) were more frequent in women. Men had higher incidence of Pulmonary Tuberculosis (40.4% vs. 32.9%), Tubercular lymphadenitis (3.8% vs 1.2%), Tu-

bercular meningitis (1.9% vs. 0%), Esophageal Candidiasis (3.8% vs 1.2%). Pulmonary Tuberculosis (P value 0.001), Tubercular meningitis (P value 0.003), Herpes Genitalis (P value 0.007) and non specific dermatitis (P value 0.01) showed statistically significant differences in occurrence rate between women and men.

Tuberculosis

The incidence of tuberculosis (42.25%) was the highest among the opportunistic infections in our series as was also recorded elsewhere in the country patients (37.65%) presented with pulmonary tuberculosis. In our study, there were (39.7%) with PTB, of which 40.4% were males and 32.9% were females with the p=0.001. Extra Pulmonary TB was found in 6.27%. Males were 7.69% and females were 3.65%.

The most predominant opportunistic infection among AIDS patients was tuberculosis, indicating a potential future high spread of the HIV-TB co-infection. Out of 101 patients with tuberculosis extra pulmonary tuberculosis was noticed in 15 of the patients. Among these patients 7 patients presented with tuberculosis lymphadenitis (2.92%) being the most common form. Extra pulmonary involvement was more common in HIV infected patients than in HIV negative patients. Tubercular meningitis reported in 3 men (1.9%) and 0 woman (0%) which is having statistically significant difference (P=0.003). Among other extra pulmonary kochs abdomen 1 man (0.64%) and 1 woman (1.2%), Potts spine 1 man (0.64%), Tubercular ascitis 1 woman (1.2%), Tubercular pleural effusion 1 man (0.64%) were reported all having statistically insignificant difference. Males are more likely to have Pulmonary Tuberculosis when compared to females with P = 0.001 which is statistically significant in our study.

Table 1 - Route of Transmission: In the study population the predominant mode of acquiring HIV infection was heterosexual contact (88.70%). Other routes of transmission as per our study are Blood transfusion (2.92%), homosexual transmission (0.41%), and Unknown (7.94%).

Table 2 - Presenting Symptoms of Patients: Fever was the commonest presenting symptom (57.32%) in both males and females, 61.53% of males and 48.78% females presented with fever. The major symptoms seen among the AIDS patients were weight weight loss (33.4%), asthenia (30.1%) and diarrhea (29.70%) were common symptoms.

Table 3 - Presenting Signs of Patients: Oral candidiasis (22.6%), Pallor (7.1%) were the commonest presenting signs. There was no difference in the clinical signs at presentation except for lymphadenopathy in the males and skin rashes, genital ulcers in the females. Lymphadenopathy May be due to various reasons. Herpes zoster tends to occur earlier in the course.

Table 4 - Opportunistic Infections: The most frequent AIDS Defining Infections were tuberculosis (42.25%), and Candidiasis (22.6%). The other conditions seen in this study were Herpes simplex (6.28%), nonspecific dermatitis (2.51%), Recurrent bacterial pneumonia (1.67%) Pelvic inflammatory disease (1.25%), Cryptococcal meningitis (0.8%), CMV retinitis (0.4%) and non specific lymphadenopathy (0.4%). The disease pattern in our study has demonstrated some gender differences. Herpes simplex (12.2% vs. 3.2%), recurrent bacterial pneumonia (3.6% vs. 0.66%), and non specific dermatitis

(6% vs. 0.64%) were more frequent in women. Men had higher incidence of Pulmonary Tuberculosis (40.4% vs. 32.9%), Tubercular lymphadenitis (3.8% vs. 1.2%), Tubercular meningitis (1.9% vs. 0%), Esophageal Candidiasis (3.8% vs. 1.2%). Pulmonary Tuberculosis (P value 0.001), Tubercular meningitis (P value 0.003), Herpes simplex (P value 0.007) and non specific dermatitis (P value 0.01) showed statistically significant differences in occurrence rate between women and men.

Route of transmission	Male	Female	Trans-gender	Total
Heterosexual	143	69	0	212
MSM	0	0	1	1
Intravenous Drug users	0	0	0	0
Blood Transfusion	0	7	0	7
Probable unsafe injection	0	0	0	0
Unknown	13	6	0	19
Total	156	82	1	239

Table-1: Route of Transmission

Symptoms	Male (%)	Female (%)	Transgender (%)	Total
Fever (> 1 month)	96	40	1	137
Weight Loss (>10% of body wt.)	51	29	0	80
Asthenia	49	23	0	72
Cough	47	24	0	71
Chronic Diarrhea	35	15	0	50
White discharge per vaginal	0	3	0	3
Altered sensorium	3	0	0	3
Difficulty in swallowing	6	1	1	8
Itching	1	5	0	6
Chest pain	1	0	1	1
Decreased vision	1	0	0	1
Urethral discharge	1	0	0	1
Sore throat	3	1	0	4

Table-2: Presenting Symptoms of Patients

DISCUSSION

As per the knowledge of the authors when this study was contemplated there was a scarcity of the valid scientific studies related to the gender profiling of the HIV patients. Thus when the present study was materialized there were not many studies available for comparison. Hence the authors have compared the findings with the available NACO data.

Demographically (Population wise status) the second largest country in the world, India has also the third largest number of people living with HIV/AIDS.

HIV estimates derived using globally comparable methods and findings from the independent Impact Assessment Study show that the National AIDS Control Programme is progressing steadily towards the objective of halting and reversing the HIV epidemic in India over the period 2007 - 2012. Available evidence on HIV prevalence and future statistical projections shows signs of stabilization of HIV epidemic in India at national level. Provisional estimates show that there are 22.7 lakh People living with HIV/AIDS in India by the end of 2008 with an estimated adult HIV prevalence of 0.29 percent. Declining trends are noted in high prevalence states indicating possible impact of sustained programme interventions. Even the prevalence among pregnant women in the age group of 15-24 years, which is considered proxy for incidence/ new in-

Signs	Male	Female	Trans-gender	Total
Oral Thrush	33	20	1	54
Pallor	11	6	0	17
Genital Ulcers	2	9	0	11
Lymphadenopathy	7	1	0	8
Vesicobullous lesion	4	2	0	6
Meningeal signs	7	0	0	0
Skin rash	1	5	0	6
Splenomegaly	1	0	0	1
Pleural effusion	1	0	0	1
Fluid thrill	0	1	0	1

Table-3: Presenting Signs of Patients

Disease	Male (%)	Female (%)	Transgender (%)	Total	P Value
Total Tuberculosis	72 (46.2%)	29 (35.4%)	0 (0%)	101	0.11
Pulmonary TB	36 (40.4%)	27 (32.9%)	0 (0%)	90	0.001*
Extra pulmonary tuberculosis					
A. TB lymphadenitis	6 (3.8%)	1 (1.2%)	0 (0%)	7	0.25
B. Tubercular meningitis	3 (1.9%)	0 (0%)	0 (0%)	3	0.003*
C. Koch's abdomen	1 (0.64%)	1 (1.2%)	0 (0%)	2	0.65
D. Pott's spine	1 (0.64%)	0 (0%)	0 (0%)	1	0.46
E. Tubercular ascites	0 (0%)	1 (1.2%)	0 (0%)	1	0.17
F. Tubercular pleural effusion	1 (0.64%)	0 (0%)	0 (0%)	1	0.46
Oropharyngeal Candidiasis	33 (21.7%)	21 (25.6%)	0 (0%)	54	0.49
Esophageal Candidiasis	6 (3.8%)	1 (1.2%)	1 (100%)	8	0.257
Herpes Genitalis	5 (3.2%)	10 (12.2%)	0 (0%)	15	0.007*
Cryptococcal meningitis	2 (1.2%)	0 (0%)	0 (0%)	2	0.19
CMV retinitis	1 (0.66%)	0 (0%)	0 (0%)	1	0.46
Recurrent Bacterial Pneumonia	1 (0.66%)	3 (3.6%)	0 (0%)	4	0.37
Pelvic Inflammatory disease	0 (0%)	3 (3.6%)	0 (0%)	3	0.01*
Non specific dermatitis	1 (0.64%)	5 (6%)	0 (0%)	6	0.01*
Non specific lymphadenopathy	1 (0.64%)	0 (0%)	0 (0%)	1	0.46

Table-4: Opportunistic Infections

fections in general population, is showing a declining trend.⁴ In the study population the predominant mode of acquiring HIV infection was heterosexual contact (88.70%). Other routes of transmission as per our study are Blood transfusion (2.92%), homosexual transmission (0.41%), and Unknown (7.94%). The NACO statistics indicate that predominant mode of transmission of infection in the AIDS patients is through heterosexual contact (87.1%), followed by perinatal transmission (5.4%), Injecting drug use (1.6%), homosexual (1.5%), blood transfusion and blood product infusion (1%), and unknown as (3.3%).

The most frequent AIDS Defining Infections were tuberculosis (42.25%), and candidiasis (22.6%). Pulmonary Tuberculosis ($P = 0.001$), Tubercular meningitis ($P = 0.003$) were significantly higher in males compared to females. Herpes simplex (P value 0.007) and non specific dermatitis (P value 0.01) showed statistically significantly higher in females compared to males in occurrence rate. Pelvic inflammatory disease is specific for females ($p=0.01$). In contrast to the western literature where *Pneumocystis jiroveci* pneumonia was commonest AIDS defining infections, we found that TB was commonest in our study. This is similar to other studies in India and other developing countries. Other conditions seen in this study were Herpes simplex (6.28%), nonspecific dermatitis (2.51%), recurrent bacterial pneumonia (1.67%) Pelvic inflammatory disease (1.25%), Cryptococcal meningitis (0.8%), CMV retinitis (0.4%) and non specific lymphadenopathy (0.4%).

The study did not reveal any IV drug users. This is consistent with the low prevalence of IV drug abuse in the community. In India I.V. drug use as a major risk factor for HIV infection is seen predominantly in the northeastern states.

There were no identifiable risk factors in 7.9% cases. The national figure of patients with no identifiable risk factor is 3.3%. This may be due to the denial of risk factors by the study subjects. The denial was more among women than men. As per NACO (Guidelines for prevention and management for common opportunistic infections/ malignancies among HIV infected adults and adolescents) May 2007 - weight loss (89%) is most common presenting symptom other preexisting symptoms and signs in patients with AIDS are fever (88%) Diarrhea (86%), Asthenia (72%), Cough (57%) and Lymphadenopathy (35%), Oral candidiasis (22.6%), Pallor (7.1%) were the commonest presenting signs.⁵ There was no difference in the clinical signs at presentation except for lymphadenopathy in the males and skin rashes, genital ulcers in the females. Lymphadenopathy may be due to various reasons. Herpes zoster tends to occur earlier in the course of HIV infection.

CONCLUSION

In the present study, 239 patients, 156 men and 82 women, who fulfilled NACO guidelines, for AIDS were included. The predominant mode of transmission in the study population was Heterosexual contact (88.70%). Fever was the commonest presenting symptom (57.32%) in both males and females. Pulmonary Tuberculosis and Tubercular meningitis were significantly higher in males compared to females. TB is the commonest AIDS defining infections in the present study. Oropharyngeal Candidial infection was an important opportunistic infection in our study. There were 2 males (1.2%) and 0 females (0%) who presented with Cryptococcal Meningitis in this study. Herpes Genitalis infection

was noticed in 15 of our patients (6.27%). There was 5 men (3.2%) and 10 women (12.2%) with Herpes Genitalis infection in this study. Women presented more commonly with Herpes simplex infection. Pelvic inflammatory disease was reported in 3 women. Women are proactive participants and full partners in the fight to halt the HIV/AIDS epidemic.⁵⁻⁷ It can be concluded that Race, class and gender have been found to serve as important determinants of a person's health and well-being status affecting his/her perception of illness, health seeking behavior, accessibility to services and coping mechanisms.⁸⁻¹⁰

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 06-01-2016; **Published online:** 27-01-2016