

Epidemiological, clinical, and immunological profile of cases at the time of HIV testing (a clinic-based observational cross-sectional study)

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Abstract

Introduction: With the availability of free antiretroviral therapy (ART), HIV/AIDS has become a chronic manageable disease, but its transmission still continues. Early testing, though desirable, is still a far-fetched goal. **Materials and Methods:** Forty-six newly detected HIV cases attending skin and sexually transmitted disease (STD) outpatient department (OPD) were studied. Careful inquiry was made to know the reason for HIV testing, marital status, concordance rate in married couples, and CD4 count at the time of presentation. **Results:** Of the 46 cases, 27 (59%) cases were in the age range of 20–40 years with 41% females and 59% males. Forty-one cases were married and cohabiting, out of which 19 were seroconcordant. Condom was used by 5/19 cases in seroconcordant group and 3/22 cases in serodiscordant group. Fourteen (30.4%) cases were tested for an epidemiologic reason (the most common being spouse positivity and antenatal care testing). Of the remaining 32 cases, the reason for testing was mucocutaneous manifestations in 16 cases, STD in 10 cases, and systemic illnesses (fever of unknown origin and weight loss) in 6 cases. Mean CD4 count was 336/cumm, with 17 cases having CD4 count <250/cumm. **Conclusion:** Except one, all cases were tested either because they were symptomatic or were referred by health-care provider for epidemiologic reasons. The presence of mucocutaneous manifestations including STD and systemic illnesses as the reason for testing as well as low CD4 count at the time of testing suggest less and late testing. Low condom use and high STD rate in married couple imply continued intramarital transmission. Although HIV seropositivity offers an entry point into continuum of comprehensive care package which includes free ART, it appears that HIV testing is still less and late.

Key words: Antenatal care, CD4 count, HIV, serodiscordance, STD

INTRODUCTION

The National AIDS Control Program (NACP) has been implemented by the Government of India since the year 1992. Currently, in its Stage IV, the NACP focuses on intensifying the preventive strategies and increasing the access to comprehensive care package of support, counseling, and treatment. A lot of efforts toward HIV awareness and prevention were put in

through NACP I–IV. At present, 448 antiretroviral therapy (ART) centers are functional in India, as of the end of the year 2016. Despite widespread availability of free testing and counseling, HIV infection continues to be unrecognized and undiagnosed until late.^[1]

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Early diagnosis not only helps in preventing further vertical and horizontal transmission but also helps in early initiation of ART and prevention of further compromise of the host immune system. Because of late diagnosis, the proportion of undiagnosed individuals with CD4 counts at critically lower levels become higher.^[2] Such cases are prone to immune reconstitution inflammatory syndrome (IRIS) and chances of qualitative immune recovery become less.

Recent policy is to test and treat. Early initiation of ART has led to a delay in AIDS progression, reduced mortality rates, and restoration of the host immune system by increasing the CD4 count.^[3] Moreover, clinical trials have shown that early initiation of ART reduces rates of sexual transmission,^[4] supporting expansion of treatment as a strategy for prevention of new infection and thus improving the patients' quality of life.^[5]

The aim of our study was to evaluate the epidemiologic, clinical, and immunologic profile of cases at the time of HIV testing. An attempt was made to know:

1. The reasons for HIV testing, whether it is health-care system generated or client generated
2. Serostatus of spouse so that prevention can be promoted in discordant spouse
3. Clinical illnesses prompting HIV testing; proportion of cases presenting with mucocutaneous manifestations and sexually transmitted diseases (STD)
4. CD4 count as a marker of immunologic status.

MATERIALS AND METHODS

A cross-sectional observational study was conducted in 46 newly detected HIV cases attending the Dermatology Outpatient Department of hospital attached to the Government Medical College, from October 2016 to June 2017. Through a semi-structured questionnaire, careful inquiry was made to know the reason for HIV testing. Marital status, seroprevalence among spouse, and history of condom use was taken into account to evaluate intramarital transmission. Cases were clinically evaluated for the mucocutaneous and systemic manifestations of HIV. All cases were screened for STD clinically and were subjected to venereal disease research laboratory test. Each case was subjected to CD4 count, chest X-ray, and sputum for acid-fast bacilli at the time of presentation. Cases were referred to ART center for further management.

RESULTS

Epidemiologic profile

Of the 46 cases, 27 (59%) cases were in the age range of 20–40 years, the reproductive age

group [Table 1]. Forty-one percent were female and 59% were male.

Forty-one cases, of the total 46 cases, were married and cohabiting, out of which 19 (46%) were seroconcordant and the remaining 22 (51%) cases were serodiscordant [Table 2].

Reason for testing

Of the total 46 cases, 32 (70%) cases were tested due to clinical illness, 13 (28%) cases were tested due to epidemiologic reasons and only a single case (2%) was tested voluntarily. Epidemiologic reasons include spouse positivity in 7 (15%) cases, antenatal care testing in 3 (6.5%) cases, and high-risk behavior in 3 (6.5%) cases. Of the remaining 32 (70%) cases, the reason for testing was mucocutaneous manifestations in 16 (51%) cases, STD in 10 (31%) cases, and systemic illnesses in 6 (18%) cases [Tables 3 and 4].

Reason for testing in married cases

Among 41 married cases, 12 cases for presenting illness, 10 cases were tested due to STD, 5 cases for systemic illness, 1 case was tested voluntarily, and remaining 13 cases were tested due to epidemiological reasons.

Condom was used only by 5/19 (26%) cases in seroconcordant group and 3/22 (13.6%) cases in serodiscordant group [Table 2].

Of 41 married cases, 10 had STD. This includes 8 cases (80%) having ulcerative STD. Five cases

Table 1: Age- and sex-wise distribution of cases and their marital status at the time of HIV testing

Age group (years)	Male (n=27)		Female (n=19)		Total (n=46), n (%)
	Married	Unmarried	Married	Unmarried	
20-40	11	3	13	0	27 (59)
40-60	10	2	6	0	18 (39)
>60	1	0	0	0	1 (2)
Total	22	5	19	0	46 (100)

Table 2: Serostatus of spouse and contraception rate among married PLHA

Variables	Seroconcordant (19)	Serodiscordant (22)	Total (n=41)
Condom use			
Present	8	0	8
Absent	11	22	33
History of STD			
Present	5	5	10
Absent	14	17	31

STD=Sexually transmitted disease; PLHA: Person Living With HIV/AIDS

Table 3: Reason for testing

Reason	Males (%)	Females (%)	Total (%)
Illness	14 (30)	8 (18)	22 (48)
History of STD	5 (10)	5 (10)	10 (22)
Epidemiologic			
Spouse positivity	5 (10)	2 (4.3)	7 (15)
High-risk behavior*	2 (4.3)	1 (2)	3 (6.5)
Antenatal screening	NA	3 (6.5)	3 (6.5)
Self-tested	1 (2)	-	1 (2)
Total	27 (59)	19 (41)	46 (100)

STD=Sexually-transmitted disease; NA=Not available *Sex workers, MSM

Table 4: Profile of Presenting illness

Presenting illness	Number of cases (%)
STDs (31%)	
Herpes progenitalis	4 (12.5)
Genital ulcer	3 (9.4)
Genital warts	1 (3)
Genital mollusum contagiosum	1 (3)
Mixed STD (chancroid + warts)	1 (3)
Cutaneous manifestations (51%)	
Herpes zoster	3 (9.4)
Pruritic papular eruptions	5 (15.6)
Maculopapular rash	4 (12.5)
Recurrent bacterial infections	3 (9.4)
Extensive seborrheic dermatitis	1 (3)
Systemic illness	5 (15.6)
TB	1 (3)
Total	32 (100)

STDs=Sexually transmitted diseases; TB=Tuberculosis

were seroconcordant and five were serodiscordant. Condom as a mode of contraception was adopted by only single case [Table 5].

CD4 count at the time of presentation

Mean and median CD4 count at the time of presentation was 336/cumm and 290/cumm, respectively, with 17 (37%) cases having CD4 count below 250/cumm and the lowest being 56/cumm [Table 6].

DISCUSSION

Epidemiological background

As per the recently released annual report of the National AIDS Control Organization (NACO) (2016–2017), the estimated prevalence of HIV among adults (15–49 years) in India is 0.26% for the year 2015. It has observed a significant decline in a decade from 0.34% prevalence in 2005 to 0.26% at the end of 2015. Around 86,000 new HIV infections among adults were estimated during the year of 2015. Andhra Pradesh and Telangana, Bihar, Gujarat, and Uttar Pradesh currently account for 47% of total new infections.^[1]

Table 5: Sexually-transmitted disease profile of seroconcordant versus serodiscordant

Number	Sex	Serostatus of spouse	History of contraception	STD
1	Male	Seroconcordant	No	Herpes progenitalis
2	Female	Seroconcordant	No	Herpes progenitalis
3	Female	Seroconcordant	No	Genital warts
4	Female	Seroconcordant	Yes	Genital mollusum contagiosum
5	Male	Seroconcordant	No	Herpes progenitalis
6	Male	Serodiscordant	No	Genital ulcer
7	Male	Serodiscordant	No	Mixed STI with chancroid and gonorrhea
8	Male	Serodiscordant	No	Genital ulcer
9	Female	Serodiscordant	No	Genital ulcer
10	Male	Serodiscordant	No	Recurrent herpes progenitalis

STI=Sexually-transmitted infection; STD=Sexually-transmitted disease

Table 6: CD4 count at the time of presentation

CD4 range (cells/cu.mm)	Number of patients (%)
0-100	6 (13)
101-200	9 (19.5)
201-300	8 (17.4)
301-350	5 (10.8)
351-400	2 (4.3)
401-500	6 (13)
501 above	10 (22)
Total	46 (100)

In the present study, 59% cases (27/46) belonged to the reproductive age group of 20–40 years, implying higher potential of transmission in the absence of any protective measures. Of the total 46 cases, 41% were females and 59% males. This is similar to the data as per NACO annual report 2016–2017, in which females accounted for 40.6% of people living with HIV and males for the remaining 59.4%.^[1]

Why intramarital transmission of HIV continues?

Among the 46 cases, 42 cases were married and cohabiting. Nineteen cases of 41 (46%) were seroconcordant, that is, partner was also tested seropositive. Of the remaining 22 (54%) serodiscordant cases, history of condom use was present only in 3 cases (13.6%). In a study in Rwanda, only 16.9% seroconcordant married cohabiting couples reported regular use of condoms. The authors pointed out that individuals infected with HIV often think that they do not have to protect themselves against reinfection/superinfection

with HIV.^[6] In a study conducted in South India, of 839 concordant and 996 discordant couples, discordants were more likely to use condoms with their spouses than concordant patients (49% vs. 28.8%; $P = 0.01$).^[7]

Higher rate of serodiscordance and lower condom use indicates higher potential for intramarital transmission. In India, heterosexual mode is the most common route of HIV transmission, of which marital sex constitutes a significant part.^[8] Lack of barrier contraceptive use in concordant couple leads to continued exposure to the fresh quantum of virus to the partner including resistant or mutant strains. It also leads to the higher potential for vertical transmission and transmission of sexually transmitted infections (STIs).

Prevention of HIV transmission to serodiscordant partner is challenging. In married couples, contraception and not STD/HIV prevention is a priority. Adaptation of permanent methods of sterilization promotes unprotected sexual activity. Less acceptability of condoms among married couples is another issue. Although circumcision is protective against HIV, less than 1% of Indian males are circumcised.^[8,9] The WHO/UNAIDS recommends the promotion of male circumcision as an additional strategy for the prevention of heterosexually acquired HIV infection in men in areas of HIV prevalence. Further, high-risk behavior of male spouse is difficult to control. All these factors promote continued intramarital transmission in India.

Presenting illness

Among the reason for testing, illness constituted 48%, followed by STDs constituting 22%. Twenty-eight percent cases were tested due to epidemiological reasons such as spouse positivity, high-risk behavior as in men who have sex with men and sex workers, and antenatal screening. Only a single case was tested voluntarily, suggesting negligible client-initiated testing due to lack of awareness. Of the presenting illness, 51% cases were tested due to cutaneous manifestations, 31% due to STDs, and remaining 18% cases were tested due to systemic illness. Various cutaneous presentations included pruritic papular eruptions [Figure 1], maculopapular rash, herpes zoster, recurrent bacterial infections, and extensive seborrheic dermatitis. Of the 4 cases with herpes zoster [Figure 2], 1 case belonged to third decade, 2 cases to fourth decade, and one to fifth decade. Early age of presentation with herpes zoster pointed toward investigating for underlying source of immunosuppression and thus, HIV testing. Systemic illnesses included



Figure 1: Person Living with HIV/AIDS(PLHA) presenting with Pruritic Papular Eruptions

pyrexia of unknown origin, dysphagia, tuberculosis, generalized weakness with unexplained weight loss, and diarrhea.

Sexually transmitted disease and HIV: The double trouble

Among the STDs, 8/10 cases (80%) presented with ulcerative STDs including herpes progeneralis [Figure 2], genital ulcer [Figure 3], and chancroid. Remaining 2 cases presented with genital molluscum contagiosum [Figure 4] and genital warts. Condom was used only by a single case, implying continued STI transmission among the partners. The presence of HIV facilitates higher STI transmission. Transmission of STI pathogens such as HPV and HSV increases multifold even while a person is asymptomatic. Ulcerative and nonulcerative STD provides easy entry and exit of HIV, and thus facilitates transmission by multiple factors. All STD cases were married with 50% being seroconcordant and 50% serodiscordant. The most common STD was herpes progeneralis.

CD4 count

In the present study, the mean and median CD4 counts were 336/cumm and 290/cumm, respectively, which was found to be similar to the study conducted in Pune at National AIDS Research Institute.^[10] A similar study conducted in Japan showed a mean CD4 count of 232 cells/cumm at the time of presentation.^[11] According to the study, HIV testing policy that promotes HIV testing in medical settings and among STI patients is needed to facilitate earlier HIV diagnosis. Median CD4 count in the present study was found to be higher (290/cumm) as compared to a similar study conducted in our STD clinic in the year 2010, which was 142.5/cumm. Compared to 2010, number of



Figure 2: PLHA presenting with Herpes Zoster



Figure 3: PLHA presenting with Genital Ulcer



Figure 4: PLHA presenting with Genital Molluscum Contagiosum

patients having CD4 count <250 /cumm decreased from 69% to 37% in 2016–2017 (STD clinic data). Lower CD4 count at the time of presentation suggested higher chances of IRIS and lower chances of complete immune reconstitution.

CONCLUSION

HIV testing is still health delivery system generated rather than client generated. Awareness programs focusing on high-risk individuals and motivating them to opt for voluntary HIV testing is the need of the hour. STD provides an opportunity to detect HIV in significant number of cases. Early and prompt treatment of STD including partner management is essential to prevent further STD and HIV transmission. High serodiscordance rates and low condom use implies continued intramarital transmission. While maintaining focus on contraception, promotion of condom use to protect from STD/HIV is of paramount importance. The presence of mucocutaneous manifestations as well as systemic illnesses as the reason for testing suggests late testing. CD4 count at the time of testing was low indicating late presenting stage. Although HIV seropositivity offers an entry point into continuum of comprehensive care package which includes free ART and preventive counseling, it appears that HIV testing is still less and late.

Limitations of the study

The sample size was relatively small. Details of circumcision and adaptation of permanent methods of sterilization such as vasectomy and tubal ligation were not obtained.

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Conflicts of interest

There are no conflicts of interest.

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Date 16th Feb to 20th Feb 2018

30 PEARLS OF MALE GENITAL DERMATOLOGY

Dr Anthony hall, associate professor, school of medicine, Deakin University, Australia

1. Let your patients tell their story. Time taken demonstrates that you are listening & that ,you care.
2. More mistakes are made by not looking than by not knowing.
3. Know normal male genital anatomy and common variants.
4. Many male patients have underlying fear of either an STD or genital cancer.
5. Essential to take genital skin biopsy if malignancy can not be confidently excluded.
6. Presence of foreskin is associated with much higher incidence of genital skin disease.
7. Pathologic phimosis should be considered a medical, rather than surgical disease.
8. Psoriasis often has a different appearance in genital region(intertriginous site)
9. Irritant contact dermatitis is commonest male genital dermatosis often misdiagnosed as candidiasis or STD.
10. Lichen sclerosus is the commonest cause of phimosis rarely causes urinary tract obstruction and is most likely a premalignant disease.
11. Treat lichen sclerosus with phimosis with potent topical corticosteroids before considering circumcision.
12. Male genital lichen planus presents as papules, plaques, annular lesions or erosive disease.
13. Zoon's balanitis may be reactive pattern. Circumcision is not treatment of choice.
14. Pruritic papules or nodules on male genitalia are almost pathognomic for scabies.
15. STDs travel in packs. If one STD is detected, one should look for another.
16. Opportunistic screening for STDs should be taken whenever appropriate.
17. Anogenital warts usually respond to repeated cryotherapy combined with topical treatments which needs patience, persistence, positivity and multi modality approach.
18. Seborrhoeic keratosis on male genitalia is often misdiagnosed as genital warts (condyloma acuminata). Histopathological differentiation may be difficult.
19. If macules or papules on palms or soles are present, always consider secondary syphilis.
20. Genital dysesthesia (red scrotum syndrome/burning scrotum syndrome/penoscrotodynia). Usually, it causes burning irritable sensation and variable distress.