

Profile of HIV serodiscordant couples in a tertiary care center

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Abstract

Background: Globally, 36.7 million people are infected with Human Immunodeficiency Virus (HIV). Of these 36.7 million people, 2.1 million are in India. Integrated counseling and testing centers are the cornerstones of early access to prevention and support services. The term “serodiscordant couple” refers to a couple where one partner is HIV-positive and the other HIV-negative.

Aim: To study the serodiscordance rates in a cohort of people attending integrated counseling and testing center.

Materials and Methods: A retrospective descriptive study of data from integrated counseling and testing center from January 2013 to December 2014 was done.

Results: Of the 7489 persons tested, 306 persons were positive for HIV (192 males and 114 females) with a prevalence of 4 percent. Of the 126 couples tested, serodiscordance was found in 46 couples, while 80 couples were seroconcordant. The overall prevalence of HIV serodiscordance was 36.5 percent. Male positive and female negative couples (M+ F-) were 35 (76.0%) and female positive and male negative (F+ M-) were 11 (23.9%). Discordant M+ F- couples were significantly higher than discordant F+ M- couples ($P < 0.001$). Most participants were aged between 21 and 40 years. The average age of men was 41.91 years and that of women was 34.21 years. The average age difference between life partners was 7.7 years. Significant association was seen between age and gender, as females were found to be younger (P value = 0.001).

Limitation: Information regarding years of married life, number of sex partners or sexual behavior pre- and post-detection were not collected. Thus, our data present only the magnitude of serodiscordance in a cohort but does not analyze the other predictors of serodiscordance.

Conclusion: Serodiscordant relationships occur more commonly in India than is presumed. Our study highlights the profile of serodiscordant couples in this part of the country. Effective measures to prevent transmission of HIV within a serodiscordant relationship are necessary steps in halting the HIV epidemic.

Key words: HIV/acquired immune deficiency syndrome, seroconcordant, serodiscordant

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Introduction

A chronic disorder can become a powerful third member in any dyadic family relationship. Presently, there are 36.7 million people globally living with HIV. New HIV infections have

fallen by 6% since 2010. In 2011, the estimated number of people living with HIV/acquired immune deficiency

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syndrome in India was 2.1 million. The prevalence of HIV in adults at the national level has continued its steady decline from an estimated peak of 0.38% in 2001–2003 to 0.34% in 2007 and 0.28% in 2012 to 0.26% in 2015.¹ Prevention strategies under the National AIDS Control Program were instrumental in reducing the annual new HIV infections among the adult population from 2.74 lakhs in 2006 to 1.16 lakhs in 2011, an overall reduction of around 57 percent.² The term “serodiscordant couple” refers to a couple where one partner is HIV-positive and the other HIV-negative. In couples where one person is living with HIV and the other is HIV-negative, the HIV-negative partner is at continuous risk for infection.³ It has been observed in some studies in Africa that the prevalence of HIV serodiscordance in couples is high, being more than 60% among married/cohabiting couples.⁴ Heterosexual contact is responsible for 87.4% of all HIV transmissions in India.⁵ The risk of HIV transmission between HIV serodiscordant couples is highly variable and reflects an interplay between biological, genetic and immunological factors along with various sociobehavioral factors.⁵ This risk is higher where antiretroviral therapy is not universally available.^{6–9} In mature epidemics, there is evidence to show that HIV serodiscordant couples contribute significantly to new HIV transmission.^{8–12} Early access to diagnosis, employing prevention strategies and providing support services through integrated counseling and testing centers are all key measures required to halt this epidemic.

Aims and objectives

The aim of this project was to study the discordance rates in a cohort of people attending integrated counseling and testing center at JSS Hospital, Mysuru, Karnataka, India.

Methods

In this retrospective study, we included all people tested for HIV in integrated counseling and testing center of JSS Hospital, Mysuru, from January 2013 to December 2014. Demographic details and history of marital status, serostatus of the couple, death of or separation from spouse if any (with reason) were all documented. The partner reporting first was considered as the index case. The cases were antiretroviral therapy naïve at the time of enrolment. The partner was counseled for examination and assessment of HIV status. Patients whose complete details were not available were contacted and the details were recorded. The spouses and children of these cases were tested to determine their HIV status.

Statistical methods

The collected data were entered into a Microsoft Excel spreadsheet. Identifying information was not recorded. Data was analyzed using SPSS software (version 16). Cramer’s test was applied to find out the association between rows and columns of tabulated results of the study. Quantitative data was statistically presented using mean and standard deviation. A value of $P \leq 0.05$ was considered statistically significant.

Observations

A total of 7489 cases were tested with 306 cases being positive. Of them, 192 were males and 114 were females with a prevalence of 4.0% [Table 1]. Most participants were aged between 21 and 40 years. Average age for men was 41.91 and women 34.21 years. The average age difference between partners was 7.7 years [Table 2]. There were 126 couples, all of whom were living together. Of these, 46 were serodiscordant and 80 seroconcordant, with a total of 206 testing positive. There were another 100 positives, of whom 27 were widowed (20 widows and 7 widowers) and 11 separated; all were seroconcordant with their spouses who died due to HIV ($P < 0.001$) [Table 3 and Chart 1]. The remaining 62 were unmarried. The overall prevalence of HIV serodiscordance was 30.0 percent. M+ F– was 35 (76.0%) and F+ M– was 11 (23.9%) [Table 4 and Chart 2]. Younger women were more significantly affected (P value = 0.001). Discordant M+ F– couples were significantly more in number than discordant F+ M– couples ($P < 0.001$). The children of the 126 couples were tested and 37 were found to be HIV positive.

Table 1: HIV status and sex distribution of patients

Gender	Tested	Positives
Males (%)	4836 (64.57)	192 (62.74)
Females (%)	2653 (35.42)	114 (37.25)
Total	7489	306

Table 2: Age distribution of patients

Age	Male	Female
<20	23	18
21–40	89	68
41–60	75	25
60+	5	3

Table 3: Marital status of patients

Marital status of patients	Number of patients
M	252
UM	62
Widow	20
Widower	7
Separated	11

M: Married, UM: Unmarried

Table 4: Seroconcordance and Serodiscordance

Seroconcordance and Serodiscordance	Discordance status	Number of patients
Concordant couples	Total	80
Discordant couples	Male+, Female–	35
	Male–, Female+	11
	Total	46

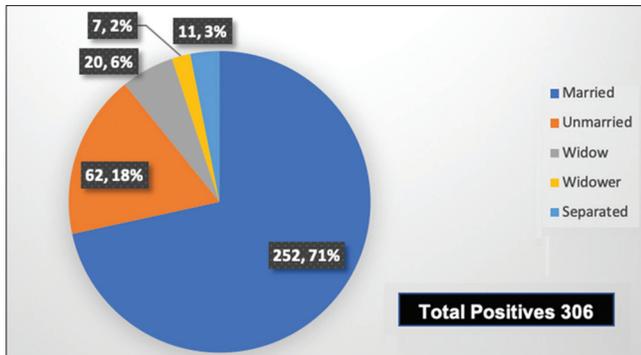


Chart 1: Marital status of patients

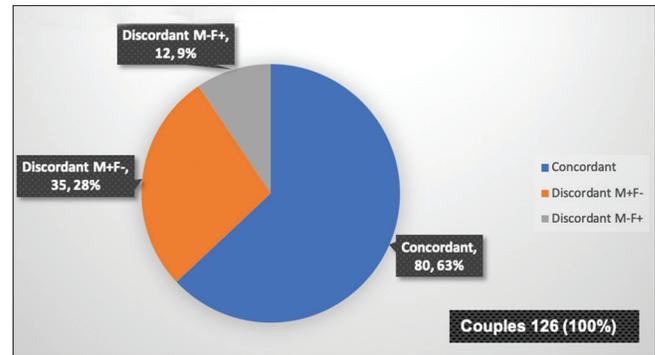


Chart 2: Seroconcordance and serodiscordance

Discussion

Acquired immune deficiency syndrome has been a health problem of great importance. Being known since long and having no complete cure makes it even more challenging.¹³ India has about 2.1 million people living with HIV. Heterosexual contact (87.4%) is the major route of transmission.⁵ In a study by Kilembe *et al.*, the highest prevalence was among participants who were between 25 and 34 years of age.¹⁴ Most of our participants were aged between 21 and 40 years ($P < 0.001$). However, the average age for men was 41.91 and that for women was 34.21 years. The average age difference between partners was 7.7 years. Data from National AIDS Control Organization (NACO) suggest feminization of the HIV epidemic in India with 39% of cases in females.¹ In our study, 114 (37.2%) females and 192 (62.7%) males were seropositive. Significant association was seen between age and gender as females were found to be younger ($P < 0.001$). A serodiscordant couple is a couple in which one partner is HIV-positive, whereas the other is HIV-negative. There is a high serodiscordance rate among married couples, and it is higher among men than among women.³ The overall prevalence of HIV sero-discordance was 30.0 percent. In a study by Kairania *et al.*, out of 337 couples tested, 293 were HIV-discordant, among whom 192 (65.5%) male partners and 101 (34.5%) female partners were HIV-infected.¹⁵ This is consistent with observations in our study. The male/female difference (76.0 vs 23.9%), was significant ($P < 0.001$). The HIV-negative partner is neither “immunized” nor protected against HIV infection. He/she is always at a risk of getting infected with HIV in future.¹³ Various socio-behavioral factors along with biological, genetic and immunological factors play a role in the risk of HIV transmission between HIV serodiscordant couples. HIV transmission among discordant couples ranges from 5.0 to 16.7 per 100 person - years, which is 5–17 times higher than the incidence among HIV negative couples.¹⁵ The annual risk of transmission of HIV from an infected partner to an uninfected partner in a serodiscordant state is around 20–25 percent.¹⁶ In our study only one female who was negative in a discordant relationship before counseling became positive during the follow-up and in

a 10-year period only two discordant couples had become concordant. In a hitherto seroconcordant couple, the male partner is more likely to be the index case in most cases and infect his female partner.³ This idea is supported by the higher number of widows (20) compared with widowers in our study, given that all were seroconcordant with their spouses.

Avoiding transmission to the seronegative partner is of paramount importance in case of serodiscordant couples. The high number of female spouses at risk of exposure emphasizes the need for continued and increased measures to prevent transmission such as information, education and communication programs to prevent HIV transmission among couples.³

Various programs such as voluntary counseling and testing, condom promotion and risk reduction counseling, needle exchange programs, opiate substitution therapy, male circumcision, immediate antiretroviral therapy irrespective of CD4 count, pre-exposure prophylaxis and vaginal microbicides can reduce the risk to 3–7 percent.¹⁷ Less than 10% of HIV seropositive individuals know their partners status and only about 20% of HIV discordant couples know that they are living in a discordant relationship.¹⁵ The HIV-positive partner should receive care and treatment services for his or her own health and to reduce the risk of transmission to the HIV-negative partner. Serodiscordant couples who are aware of each other’s HIV status will be able to adhere to safe sexual practices, treatment and prevention of mother-to-child transmission interventions and give each other emotional support. By consistently practicing safer sex such as using male and female condoms, it is possible for couples to stay serodiscordant indefinitely.¹⁸

In our study, 37 children were found to be HIV-positive. Seropositive couples try to conceive even after knowing their status because of societal pressure. HIV-positive females with discordant partners face even greater problems as they have to take care of themselves, conceive, enter prevention of mother-to-child transmission programs, take care of the positive child and also bear the social stigmata.

Conclusion

Serodiscordant relationships occur more commonly than presumed. Our study highlights the profile of serodiscordant couples in a cohort in southern India. The high prevalence of sero-discordance emphasizes the importance of couple/partner testing. Effective measures to prevent transmission to the HIV negative partner will help in halting the HIV epidemic. Information, education and communication programs, promoting condoms use, early antiretroviral therapy to HIV-positive partner and pre-exposure prophylaxis will reduce transmission. Long-term follow-up of couples is required to assess the effectiveness of this strategy.

Limitation

Information regarding years of married life, number of sex partners or sexual behavior pre- and post-detection were not collected. Thus, our data present only the magnitude of serodiscordance in a cohort but does not analyze the other predictors of serodiscordance.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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