

ORIGINAL RESEARCH

Proportion of syphilis infections among HIV positive individuals from ICTC and PPTCT center of a tertiary care hospital

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Abstract

A study in a tertiary care hospital of Madhya Pradesh investigated the prevalence of Syphilis co-infection among HIV-positive individuals. Examining 445 patients over a year, we found that 9.2% were reactive for Syphilis, with overall (56.1%) exhibiting active infection. This prevalence was higher compared to previous studies. The findings highlight the importance of routine syphilis screening of HIV-positive individuals in India, emphasizing the need for regular analysis to optimize prevention and treatment strategies for co-infections.

Keywords: HIV, Syphilis, Sexually transmitted infections (STIs), Co-infection, Rapid plasma Reagin antibody (RPR) test and HIV-AIDS

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Introduction

The provided text highlights the relationship between HIV (Human Immunodeficiency Virus) and syphilis, two sexually transmitted infections (STIs) that share common modes of transmission. In the context of India, both HIV and syphilis infections are of concern, with the average HIV infection prevalence declining over the years. Key populations, such as female sex workers, men who have sex with men, and migrants, are at higher risk of HIV infection. Additionally, young women of childbearing age are at increased risk and may transmit the infection to their infants during pregnancy and breastfeeding ^[1].

Syphilis, an ulcerative infection, can increase the transmission of HIV and may present atypically in HIV-infected patients. Factors such as lack of awareness about STI symptoms and lower education levels are positively associated with both syphilis and HIV infections. HIV infection can alter the manifestations of syphilis, leading to an atypical presentation and more aggressive secondary infection. There is also an increased rate of early neurological and ophthalmic involvement in HIV-positive individuals with syphilis ^[2]. HIV infection may alter primary manifestations of Syphilis, leading to an

atypical presentation and/or multiple ulcers that may be mistaken for genital herpes. The rate of symptomless primary syphilis is higher and proportionately more HIV positive patients present with secondary disease. Secondary infection can become more aggressive ^[3].

Further research is needed to understand the epidemiological patterns, genotypic and phenotypic characteristics, and co-infections of HIV and syphilis in India. Proper investigations in this field are necessary to address the burden of HIV and Syphilis infections and work towards the goal of becoming an HIV-AIDS free nation.

Aim: Aim of our study is to find out the proportion of Syphilis infection among all individuals found HIV positive at our ICTC and PPTCT center.

Methodology: This was a prospective cross sectional study conducted in the Department of Microbiology of a tertiary care hospital over a period of 1 year from August 2021 to July 2022. All individuals attended our ICTC and PPTCT were tested for HIV antibody as per the Strategy 3 of NACO. Individual found positive for HIV were further tested for syphilis infection

using Rapid plasma Reagin antibody (RPR) test. Individuals with history of current or past treatment for Syphilis were excluded from the study. The study protocol was approved by the ethics committee of the institution. A total of 445 individuals found positive for HIV were included in the study and further tested for Syphilis.

Collection of specimen: For serological assays, 4–5 ml of blood was collected aseptically by venepuncture. The collected blood was allowed to clot; serum was separated by centrifugation at room temperature and used for HIV and Syphilis testing.

Laboratory diagnosis: Diagnosis of HIV infection was performed using NACO strategy III for HIV testing using O3 kit based on different antigens and test principles. For diagnosis of syphilis, serum samples were screened by the RPR test. All sera were tested in serial dilution to remove any prozone phenomenon. Serum found to be reactive in a titre of >1:8 were considered to be having an active Syphilis infection.

Results and Discussion

A total of 445 individuals found HIV positive during study period. The demographic characteristics of the study population are given in Tables 1 and 2. Of the 445 HIV positive individuals 66.29% were male, 32.8% were female and 0.9% were Transgender (Image-1). Mean age of HIV patients in our study was 36.61 ± 12.51 years like the study conducted by Anil *et al.* from J.A. group of Hospital Gwalior^[4]. In this study majority 366 (82.25%) of HIV

positive individuals belong to the age group 15-49 years, precisely 21-40 years (64.27%). Dr Kabita *et al.* reported the majority of HIV positive cases from the age group of 15-45 years (80%) from the South Eastern region of Assam^[5]. In our study, the number of male clients was higher at 66.29% than female (32.8%). It was similar to a study reported by Li Wei Ang *et al.* and Sherwal B *et al.* who reported male predominance among their HIV positive was 92.2% and 64.4% respectively^[6,7].

In present study 9.21% (41/445) individuals were RPR reactive (Table 3/4) which was higher than the study by Gilbert *et al.* who estimated 5.3% of RPR reactive. In this study 56.1 (23/41) individuals were found to have titre greater than 1:8 indicating active syphilitic infection as compared to only 12.6% reported by Gilbert *et al.* The prevalence of HIV/Syphilis Co-infection was 10.6% in a study by Launa *et al.*^[8] and 8.21% by Hui Zi Gong *et al.*^[9]. Sonali Bhattar observed HIV/Syphilis Co-infection in 3 out of 200 HIV positive patients was lower than our study^[10,12].

Conclusion

Out of 445 HIV infected patients 23 were having syphilis infection, syphilis is one of the important risk factors for occurrence of HIV infection this invites attention. Towards screening of all HIV positive patients for Syphilis. The present study highlights that the time to time analysis is needed to standardize existing & new policies frontline screening for HIV and Syphilis which may impact positively on prevention and treatment strategy of HIV and HIV associated co-infection of Syphilis.

Table1: Distribution of Gender with respect to HIV infection

Gender	Number of HIV positive Individuals (n=445)	Percentage
Male	295	66.29
Female	146	32.8
Transgender	4	0.9

Table2: Distribution of HIV infection with respect to Age

Age (in years)	Number of HIV Positive individuals	Percentage
0-10	9	2.02
11-20	8	1.79
21-30	143	32.13
31-40	143	32.13
41-50	80	17.9
51-60	38	8.53
>60	24	5.9

Table3: Distribution of RPR Reactivity among HIV Positive individual

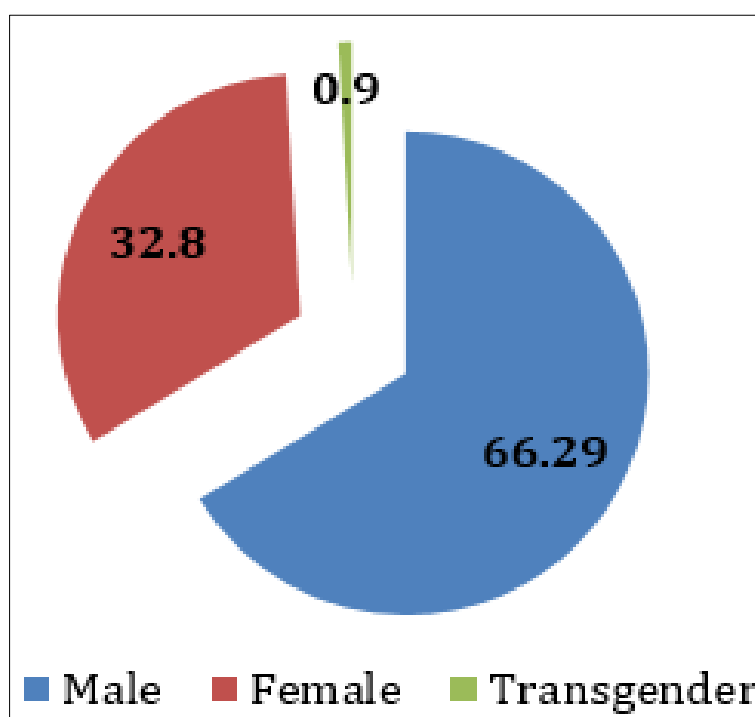
RPR	No of HIV Positive Individuals (n=445)	Percentage (%)
RPR Reactive	41	9.21
RPR Non-Reactive	404	90.79

Table 4: Distribution of RPR Titre among all HIV positive individuals

RPR Titre	No of sample tested(n=41)	Percentage	
1:02	12	29.3	Titre <1:8=18(43.9%)
1:04	2	4.9	
1:08	4	9.7	
1:16	7	17.1	Titre ≥1:8 =23 (56.1%)
1:32	6	14.6	
2:04	5	12.2	
3:08	4	9.7	
	1	2.4	

Table5: Gender wise distribution of Individual with HIV Syphilis Co-infection

Gender	Number of Individuals	Percentage
Male	21	95.45
Female	0	0
Transgender	1	4.55

**Fig 1: Gender Distribution with respect to HIV infection****References**

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