

Prevalence of Syphilis among People living with HIV (PLHIV) attending a tertiary care hospital in coastal south India

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ABSTRACT

Background: Syphilis and HIV are both transmitted sexually so people can be infected with both diseases. Co-infection of syphilis and HIV alters the course of both the diseases. Venereal disease research laboratory (VDRL) test is a non-treponemal test, used commonly in Antiretroviral Therapy Centres (ART) in India to detect syphilis. The aim of our study was to determine the prevalence of syphilis in HIV-infected patients attending a tertiary care hospital using VDRL test. **Materials and Methods:** Using a cross-sectional study design 113 HIV positive patients were included. VDRL test was used to screen for syphilis. The collected data was analyzed using SPSS version 11.5. **Results:** Among the 113 patients screened 69(61%) were males and 44(39%) were females. Majority of the patients had acquired the disease through heterosexual transmission (92.9%). VDRL test was negative in all 113 patients. **Conclusion:** The seroprevalence of syphilis in coastal South India using VDRL is very less. Specific tests like Fluorescent Treponemal Antibody Absorption test (FTA-ABS) or Treponema pallidum hemagglutination Assay (TPHA) would be beneficial to detect asymptomatic syphilis in ART centers.

Key Words: Syphilis, HIV/AIDS, VDRL

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INTRODUCTION

The incidence of syphilis is rising all over the world, partly due to the increased transmission in HIV patients.¹ Syphilis and HIV are both transmitted sexually so people can be infected with both diseases. HIV has several effects on the clinical presentation and diagnosis of syphilis. Syphilis increases the risk of HIV acquisition by causing genital ulcers² and it increases HIV transmission among HIV patients by increasing the amount of viral shedding.

Serological tests are used commonly to detect syphilis. Venereal disease research laboratory (VDRL) test is a non treponemal test, used commonly in Antiretroviral Therapy Centres in India (ART) for screening of syphilis due to its simplicity and low cost. There is hardly any data from India documenting the prevalence of syphilis using VDRL

test. The aim of this study was to evaluate the prevalence of seroreactivity to syphilis among HIV-infected patients using VDRL test.

MATERIALS AND METHODS

A facility based cross-sectional study was carried out among 113 People Living with HIV (PLHIV) after obtaining ethics committee approval from the Institutional Ethics committee of Kasturba medical college Mangalore. The sample size was calculated based on an expected proportion of patients having HIV syphilis co-infection as 8%, based on previous studies³ and absolute precision of 5% and confidence interval of 95%. The study subjects were adult patients aged more than 18 years. HIV testing and interpretation was done according to NACO guidelines.

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During the study period of two months, 113 consecutive HIV patients who gave written informed consent participated in the study. The study was carried out at Kasturba Medical College hospital (tertiary health care centre) in Mangalore (South India). Patients who agreed to participate were interviewed by the investigators for 15 to 20 minutes. The interview was guided by a semi-structured questionnaire. VDRL test was used to detect syphilis.

Data collected was analyzed using SPSS Version 11.5 statistical software. Descriptive statistics were used to present the data.

RESULTS

A total of 113 HIV positive patients were screened for syphilis with VDRL as the tool. Among the 113 patients screened 69 (61%) were males and 44 (39%) were females (Table 1). Maximum number of patients belonged to the age group of 21-49 years i.e. 64 patients (Table 1). Majority of the study population was literate (76%). Majority of patients 92.9% had acquired the disease heterosexually (Table 2) and 31.9% patients had CD4 count more than 450 (Table 3). VDRL was negative in all 113 patients (Table 4).

DISCUSSION

The present study revealed that the prevalence of syphilis in coastal Karnataka is very less. Of the 113 patients studied VDRL test was negative in all the patients.

Serological investigations to diagnose syphilis are divided into non-treponemal tests and specific treponemal tests. VDRL and the rapid plasma reagin (RPR) are non-treponemal tests. VDRL is commonly used in Antiretroviral Therapy Centres (ART) to detect syphilis in India. All HIV positive patients should have baseline VDRL screening and if VDRL is reactive, the diagnosis should be confirmed by the specific treponemal test.⁴ Sensitivity of nontreponemal and treponemal tests for syphilis is approximately 75% in the primary stage and 100% in the secondary stage.⁵ False-positive and false-negative results on serologic tests for syphilis may be seen in HIV-infected persons.^{5,6} Prozone reactions may affect VDRL. Prozone reactions result in false-negative reactions that occur due to high concentrations of target antibodies in the specimen. The incidence of the prozone phenomenon is high in the HIV-infected persons.³

In a study from India⁷ involving 88 HIV patients, eight patients (9.1%) were reactive by VDRL and 42 patients were reactive by TPHA (47%). All eight VDRL reactive patients were also reactive by TPHA. Turbadkar et al have

Table 1: Age and gender distribution of the study population

Age (years)	n (%)	
	Male	Female
<20	1 (.8)	0 (0)
21-49	34 (30)	30 (26.5)
50-69	31 (27.4)	12 (10.6)
>70	3 (2.6)	2 (1.7)
Total	69	44

Table 2: Mode of acquiring HIV

Mode of acquiring HIV	n	%
Blood transfusion	1	0.8
Heterosexual	105	92.5
Vertical transmission	1	0.8
Unknown	6	5.3

Table 3: CD4 count of the study population

CD4 count (cells/ml)	N	%
<200	23	20.4
200-249	13	11.5
250-299	7	6.2
300-349	15	13.3
350-399	6	5.3
400-449	11	9.7
>450	36	31.9
Unknown	2	1.8

Table 4: VDRL results of study population

VDRL	N
Positive	0
Negative	113

recommended that in all cases of suspected syphilis two serological tests, i.e. one non-treponemal screening test, like VDRL and one specific treponemal test, like TPHA should be done for laboratory diagnosis of syphilis.⁷ The prevalence of syphilis was 2.7% in a Brazilian study using VDRL test.⁸ In a study from Israel, 14% of HIV-infected patients had syphilis seroreactivity.⁹ The prevalence of HIV-syphilis co-infection was 2.1% in Nigeria.¹⁰ According to Chow et al prevalence of HIV-syphilis co-infection was 2.7% among men who have sex with men (MSM).¹¹ In a Spanish study of 1161 HIV-positive patients the baseline syphilis seroprevalence was 13%.¹² In contrast to these studies, we did not find any VDRL positive patients. Such observed difference could be due to different epidemiology of the infections in our study population.

Co-infection of syphilis and HIV alters the course of both the diseases. Syphilis causes transient increases in HIV viral load and decreases the CD4 count.¹³ These transient increases in viral load lead to the increased risk of HIV transmission.¹⁴ Detection and treatment

of syphilis can, therefore reduce HIV transmission.¹⁵ In primary syphilis, HIV infected patients may present with more than one chancre.¹⁶ Co-infection with HIV increases the incidence of the neurological complications of syphilis.¹⁷

Our study had some limitations. Our study population did not include intravenous drug users and MSM. High rates of HIV/syphilis co-infection have been observed in MSM. So the prevalence of syphilis in our study may have been low. Repeat VDRL testing after 4-6 weeks was not done in our study to rule out the possibility of false negative results. We used a cross sectional study design and it has its own limitations.

CONCLUSION

The seroprevalence of syphilis in coastal South India using VDRL is very less. The serological diagnosis of syphilis may not be straight forward using non-specific treponemal tests. The efficacy of ART has resulted in increased survival of patients and their practice of unprotected sex especially in developing nations. As syphilis is still a prevalent infection in some developing countries, co-infection of HIV with syphilis should be considered. Specific tests like Fluorescent Treponemal Antibody Absorption test (FTA-ABS) or Treponema pallidum hemagglutination Assay (TPHA) would be beneficial to detect asymptomatic syphilis among HIV patients visiting ART centres even though they are costly.

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ICMR STS

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Authors Contribution:

DM, JTR and BA were the medical staffs who were involved in patient care. DM and UB provided scientific expertise for the article design. PV did the data collection. DM, JTR, BA, PV, UB and SM elaborated on the article and revised the manuscript. All authors contributed to refinement of the article and approved the final manuscript.

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