

ORIGINAL ARTICLE

Prevalence of Syphilis, Gonococcal and Human Immunodeficiency Virus (HIV) Infection- A Study in a Tertiary Care Centre of Vidarbha Region of India

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Abstract

Background: Sexually transmitted diseases (STD) are an important public health problem because of their health, social and economic consequences. Situation of STDs in India is like tip of iceberg. Hence the present study was planned to know the prevalence of syphilis, gonococcal and human immunodeficiency virus (HIV) infection in Vidarbha region of India which is a central part of country.

Materials and Methods: 400 patients attending sexually transmitted disease clinic of Indira Gandhi Medical College and Hospital Nagpur, Vidarbha having urogenital complaints and suspected of having sexually transmitted disease were randomly selected and divided kept into 2 groups. Group I comprised patients with genital ulcers and symptoms and signs of secondary syphilis while in group II patients with genital discharge and scrotal pain and swelling were kept. **Results:** Age group between 25 - 35 years is commonly affected with male to female ratio of 5.25:1. These are associated with high risk factors like contact with commercial sex workers (CSW) and heterosexuality. STDs found in decreasing order are Syphilis, Chancroid, Gonorrhoea, Candidiasis, Trichomoniasis and Granuloma inguinale. HIV seropositivity is also found high (7%). **Conclusion:** STDs continue to cause significant morbidity in this region. Commonest presentation is genital ulcer followed by genital discharge. There is a need of programs with an integrated approach, inducing behavioral change, promoting condom use and controlling STDs which may reduce the STDs and HIV infection in this region.

Keywords: Genital ulcer, STD, Syphilis

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Introduction

Sexually transmitted diseases are an important public health problem because of their health, social and economic consequences. In 1521, Fracastorius wrote his famous poem 'Syphilis sive Morbus Gallicus' and gave the disease its name. By this time syphilis had been spread all over Europe by soldiers and mercenaries returning from the war and had been carried by Portuguese sailors to India and the Far East. In the eighteenth century it was known that syphilis and gonorrhoea were transmitted by sexual intercourse, but many believed them to be manifestation of the same infection.¹ The

most serious health consequences occur in women and children. In terms of economic loss, sexually transmitted diseases collectively rank among the five most important causes for loss of years of productive life in developing countries and account for loss of several billion dollars each year.

In India, STDs are not notifiable. Therefore, their grave consequences on the health of the individual cannot be ascertained. Situation of STDs in India is like a classical iceberg where much remains hidden under the surface. For every case who seeks treatment for STDs, there are atleast one and many a times more that are infected. Moreover, numbers of HIV cases are increasing day by day and many are underreported thus are creating major public

health problem. Hence the present study was planned to know the prevalence of syphilis, gonococcal and human immunodeficiency virus (HIV) infection in Vidarbha region of India which is a central part of country.

Materials and Methods

400 patients attending sexually transmitted disease clinic of Indira Gandhi Medical College and Hospital having urogenital complaints and suspected of having sexually transmitted disease were randomly selected for the study. After wearing gloves, ulcer was cleaned with gauze piece soaked in normal saline, lesion was then rubbed with gauze piece till little bleeding occurs. Then ulcer was held between thumb and first finger and pressed till bleeding stopped, then fluid (serum) was allowed to come out from the depth of the ulcer. This fluid was collected in a glass capillary tube and ends of the capillary tube were sealed and transported to laboratory immediately. Respective specimen were processed in the laboratory according to conventional techniques described by Mackie and McCartney, Diagnostic Medical Microbiology 14th ed. 1996 and National AIDS Control Organization, reference manual for Laboratory Technicians, Diagnosis of Sexually Transmitted Diseases, New Delhi, 1994. Procedures done –

- 1) Wet film examination
- 2) Dark ground illumination
- 3) Gram's stain
- 4) Giemsa's stain
- 5) Culture
- 6) VDRL test
- 7) ELISA test for HIV antibody detection.

Results

All the cases were divided into two groups depending upon presenting sign and symptoms. Group I- consist of 232 cases including 191 cases with genital ulcers and 41 of secondary while group II- had 168 patients presenting with urogenital discharge/dysuria/lower abdomen pain. A total of 191 (47.75%) cases including

177 males and 14 females reported urogenital ulcer, while 36 (9%) including 28 males and 8 females reported rashes. Only 5 (1.25%) cases (4 males and 1 female) had complaint of condylomatalata.

Male preponderance was noted in present study with 336(84%) males and 64(16%) females. Maximum number of cases, 202(50.5%) were between the age group of 26-35 years followed by age group 15-25 years, 104 cases (26%). Maximum cases, 76.5% fall between 15-35 years of age (Table-1). 56.5% patients were unmarried in which male (220 unmarried, 116 married) preponderance was observed. In females, married cases were more (58 married, 6 Unmarried) in comparison to unmarried.

Table- 1: Age and Sex wise distribution

Age Group	Male	Female	Total	%
15 -25	88	16	104	26.0
26 -35	163	39	202	50.5
36 -45	50	9	59	14.75
46 -55	31	0	31	7.75
Above 55	4	0	4	1.0
Total	336(84%)	64(16%)	400	10

Most of the patients were from lower socioeconomic status. Of these 125(31.25%) were labourers. Others groups in order of frequency were housewives, 54(13.5%), students 37(9.25%) and office employees 36(9.00%). These cases were had history of association with high risk factors such as 279(69.75%) patients gave history of contact with commercial sex workers and 49(12.25%) patients had multiple sexual contacts. 47(11.75%) patients reported similar symptoms in their spouse. 25(6.25%) patients denied history of any contact.

In group I- *H. ducreyi* were detected in 42(10.5%) cases, out of 116 clinically diagnosed cases of chancroid. *T. Pallidum* was demonstrated in 3(1.75%) out of 24 clinically diagnosed cases of primary syphilis by DGI, Calymato *Bacteriumgranulomatis* were present in 2(0.5%) cases. In 185(46.25%) cases, no organisms were present. In group II- out of 163 patients with genital discharge, most of the cases 67(16.75%) demonstrated no organism

while *N. Gonorrhoeae* were isolated in 37(9.25%) cases (Table- 2).

On VDRL reactivity, 63(15.75%) cases were VDRL reactive. Among those who presented with genital ulcer disease and symptoms and signs of secondary syphilis, VDRL test was reactive in 52 patients. In genital discharge cases, test was reactive in 11(2.75%) patients. Sera with a dilution titre of 16 and more were taken as reactive (Table- 3).

Table- 2: Bacteriological analysis of patients with genital discharge

Sr. No.	Organisms Demonstrated	Cases	%
1	<i>Neisseria gonorrhoeae</i>	37	9.25
2	<i>Candida albicans</i>	18	4.5
3	β haemolytic streptococci	08	2.0
4	<i>Trichomonas vaginalis</i>	07	1.75
5	<i>Staphylococcus aureus</i>	07	1.75
6	<i>E. Coli</i>	06	1.5
7	<i>Klebsiella species</i>	06	1.5
8	Enterococci	05	1.25
9	<i>Gardnerellavaginalis</i>	04	1.00
10	<i>Staphylococcus albus</i>	03	0.75
11	No organism isolated	67	16.75
Total		168	42

Table- 3: VDRL reactivity

Group	Cases	Male	Female	Total	%
Group I	232	44	08	52	13.00
Group II	168	09	02	11	2.75
Total	400	53	10	63	15.75

Discussion

In the present study out of total 400 cases of STD, 191 cases presented with genital ulcer, 41 patients presented with maculopapular rash over body, palmer patches with 36 and condylomatalata with 5 and they all had previous history of genital ulcer. They were suspected of secondary syphilis based on clinical features and past history of ulcer.

Out of 191 cases with genital ulcer, 116 cases were of clinically diagnosed chancroid and 24 cases were suspected for primary syphilis and rest 51 was suspected for other diseases. Out of total 24 cases of suspected primary syphilis, only in 3 cases *T. pallidum* was demonstrated by

dark ground illumination. In no case of secondary syphilis, dark ground illumination was positive from lymph node aspirate. This low percentage of demonstration of *Treponema* by dark ground illumination was because patients reported quite late during the healing phase of the ulcer. Secondly, some ulcers were badly infected. Thirdly, patients had either taken oral antimicrobial drugs or applied it locally.

In 3 cases, dark ground examination was positive for *T. pallidum*, and all 3 were male. Among the 24 cases of suspected primary syphilis, 7(29.16%) were VDRL reactive. Among the three cases where *T. pallidum* was demonstrated, all were VDRL non reactive. Among 41 cases of suspected secondary syphilis, 36(87.8%) cases were VDRL reactive. In the study carried out by Singh R² in 1961 at Delhi region of India in which 4523 STD cases were examined he found 50.78% syphilis cases. He reported VDRL reactivity of 71% in primary syphilis and 100% VDRL reactivity in secondary syphilis. Among the 5 patients who had secondary syphilis but VDRL non reactive, 3 had indeterminate low titred serologic problems and 2 had history of repeated treatment (Rangiah et al 1962)³.

Out of this 36 VDRL reactive cases from suspected secondary syphilis, 31 VDRL reactive were males and 5 were females. From the remaining 167 cases other than that suspected for primary and secondary syphilis, 9(5.38%) were VDRL reactive of which 7 were male and 2 were female. So total VDRL reactive cases from group I (232 cases) were 52(22.41%) (7 cases from primary syphilis, 36 from secondary syphilis and 9 were from cases suspected for other diseases). Thus total syphilis cases were 55 (23.7%) after including cases positive by dark ground examination.

Out of 168 cases presenting with genital discharge, VDRL reactivity was 6.54 % (11/168). VDRL reactivity among these cases might be because majority of these patients who visit STD clinic usually gave history of similar episodes in the past. Secondly, the incubation period of discharging syndrome is quite shorter than the incubation period of syphilis. Probably in these cases the treatment of discharge masking or deferring the onset of early syphilitic

lesion or changing the course of the disease. Thus out of total 400 STD cases including group I and II, 66 (16.5%) are syphilis cases and all are DGI positive and VDRL reactive.

Thakur et al⁴ in 1990 reported VDRL reactivity among STD cases of 19.69% in Himachal Pradesh state of India. Ganguly et al⁵ in 1983 at New Delhi found 9.2% cases of syphilis among 227 cases of STD. Banerjee et al⁶ in Gujrat in 1994 observed 52 syphilis cases out of 117 total STD patients. Ghosh et al⁷ in Calcutta in 1994 found only 8% cases of STD out of 16440 total STD cases while Kar et al⁸ in Barrackpore observed 9.7 cases out of 462 total STD cases.

In the present study the percentage of syphilis in male is 16.66% (56 cases) and in female is 15.62% (10 cases). Number of female cases with syphilis was less as compared to male because of less number of females in the study but there is no significant difference between overall percentage of syphilis in males and females. Male: Female ratio in our study is 5.6:1 for syphilis. Col et al⁹ in 1982 at Chandigarh region of North India observed male: female ratio of 3.4:1 for syphilis. Our study is near to the study of Narayan et al (1994)¹⁰ where percentage of syphilis was 19%. Percentage of syphilis as high as 70% was reported by Hajini et al¹¹ in 1975 at Srinagar district of Jammu and Kashmir, India and as low as 0.4% by Wallin J¹² in 1974. The high percentage of syphilis may be because they studied only five classical venereal diseases i.e. Syphilis, Gonorrhoea, Chancroid, LGV and Granuloma inguinale. Low prevalence of 0.4% noted by Wallin J¹² was because he observed the constant decreasing trend in syphilis in Sweden during the period of 1950 to 1976.

The HIV seropositivity in group I patients was 8.1% (19/232) i.e. four and half fold as compared to normal 1.78% rate of general population) while it was 5.35% (9/168 i.e. 3 fold grades) in group II patients. Different epidemiological studies suggests that an individual with genital ulcer caused by syphilis, chancroid or herpes has a fourfold greater risk of acquiring HIV infection whereas nonulcerative STDs such as gonorrhoea, chlamydia and trichomoniasis (NGUs) carry a 2-3 fold greater risk.¹³ Quinn observed that in

urban centers of India, recurrent genital ulcer disease and urethritis/cervicitis have 7 and 3 fold higher risk of seroconversion respectively.¹⁴ Present study is also in accordance with the study carried out by Narayan et al¹⁰ 5%, and Tripathy et al¹⁵, 13.6% HIV seropositivity. It is suggested that STDs that result in genital ulceration disrupt the integrity of mucosal epithelium and greatly increase the introduction of HIV infection in sexually promiscuous people.¹⁶ It is also established that if these STDs particularly ulcerative and discharging lesions, diagnosed early and treated effectively, there is less risk of HIV transmission.^{10,17} Thus the male preponderance among HIV infected patients was due to the fact that more men attend the STD clinic than women. They had reasons such as contact with multiple sex partners and commercial sex workers. All the HIV infected men in this study gave history of frequent intercourse with CSWs. Therefore it is assumed that they had acquired the infection from CSWs. Further, certain occupation of men like long distance truck drivers increases the vulnerability for promiscuous behavior due to long absence from homes.¹⁸

Conclusion

It is concluded that sexually transmitted diseases continue to cause significant morbidity in this region. Commonest presentation is genital ulcer followed by genital discharge. Age group between 25 - 35 years is commonly affected with male to female ratio of 5.25:1. Maximum number of cases belongs to lower socioeconomic group. High risk factors like contact with CSW and heterosexual promiscuity are the major sources of infection. Various sexually transmitted diseases found in decreasing order are Syphilis, Chancroid, Gonorrhoea, Candidiasis, Trichomoniasis and Granuloma inguinale. HIV seropositivity is also high (7%). As sexually transmitted diseases and HIV infection are closely interlinked, early diagnosis, prompt treatment and control of STDs offers a rational approach to the control of HIV infection. There is a need of programs with an integrated approach, inducing behavioral change, promoting condom use and controlling

STDs which may reduce the HIV infection and its transmission. Apart from this, information, education and effective communication, involvement of nongovernment organizations will act as preventive measures in controlling STDs and HIV infection in this region.

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References

1. King Claude Philip. Syphilis venereal diseases 4th edition. ELBS Bailliere Tindall 1980b: 1-14.
2. Singh Ratan. Pattern of Venereal disease. Ind J of Derm Venereol 1962; 28: 62-9.
3. Rangiah PN. The pattern of venereal diseases. Ind J of Derm Venereol 1962; 28(2): 49-55.
4. Thakur TS, Sharma V, Goyal A, MI. Seroprevalence of HIV antibodies, Australia antigen and VDRL reactivity in Himachal Pradesh. Ind J of Med Sci 1990; 332-5.
5. Ganguly DD, Sundharam JA, Bhargawa NC, Dey MM, Ravi S, Sharma VK. A study of behavioural aspects of STD. Indian J Dermatol 1983; 149: 11-6.
6. Banerjee S, Bansal RK, Gandhi R. Psychiatric morbidity and risk taking behaviour in STD. Indian J Dermatol Venereol Leprosy 1994 ; 60 : 79-81.
7. Ghosh Sadhan Kumar, Roy Alok Kumar. A ten year study of STD cases in an urban clinic in Calcutta. Ind. J Dermatol Venereol Leprol 1994a ; 60 : 323-6.
8. Kar PK, Dhaka RS, Chari KVR. HIV infection in the patients of STDs. Ind J Dermatol 1996 ; 41 (1) : 9-12.
9. Col LT, Kapur TR. Pattern of sexually transmitted diseases in India. Indian J Dermatol Venereol Leprosy 1982; 48: 23-34.
10. Narayan R, Mathur D, Bhargawa R, Agrawal VS, Saxena VN. HIV seroprevalence in various high risk groups. Ind J Dermatol, Venereol Leprol 1994 ; 10 : 262-65.
11. Haj-ini GH, Milapkaur and Ahmadshah SN. Venereal diseases in Kashmir. Indian J of Dermatol and Venereology 1975 ; 41 : 21-5.
12. Wallin Johan. Sexually transmitted diseases the present situation in Sweden. Brit J of Venereol Ds 1978 ; 54 : 24-7.
13. Laga M, Diallo MO, Buve A. Inter-relationship of STD and HIV: where are we now? AIDS 1994; 8(suppl1): 119-24.
14. Quinn TC, Glasser D, Cannon RD et al. Human immunodeficiency virus infection among patients attending clinic for STD. New Eng J Med 1996; 318(4): 197-203.
15. Tripathy SP, Banerjee K, Deshpande SJ et al. Prevalence of HIV in STD patients in Pune. Abstract, The 2nd Int. Congress on AIDS in Asia and Pacific, New Delhi 1992; 106: 155.
16. Padian N, Wiley J, Winkelstein W. Male to female transmission of HIV. JAMA 1987; 9: 258-788.
17. Myron SC, Irving, Rachel Et al. Reduction of concentration of HIV -I in semen often treatment of urethritis: Implications for prevention of sexual transmission of HIV1. Lancet 1997; 349: 1868-73.
18. Jacob M, John TJ, George S et al. Increasing prevalence of HIV infection among patients attending a clinic for STD. Indian J Med Res 1995 ; 101 : 6-9.