ORIGINAL ARTICLE

PATTERN OF SEXUALLY TRANSMITTED INFECTIONS IN MALES IN INTERIOR SINDH: A 10-YEAR-STUDY

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Background: Sexually transmitted infections (STIs) are widespread in Pakistan and have not been fully documented particularly in Sindh Province. The aim of this study is to determine the number and clinical pattern of various types of STIs in general population of Larkana division and its surrounding cities. **Methods:** A hospital based prospective study was carried out at Male-STD-Clinic in the Department of Dermatology, Shaheed Muhtarma Benazir Bhutto Medical University Hospital Larkana from January 2000 to December 2009. **Results:** Among 4,288 patients, 3,947 (92.04%) had the history of extra marital sexual contact and simultaneously had developed the clinical signs of STIs; 341 (7.95%) had history of extra marital sexual contact but did not have the manifestation of STIs. Majority of the patients (3,860, 90.01%) had the history of heterosexual contact with different partners, but only few 171 (3.98%) of them had the history of homosexual contact. According the syndromic diagnosis 1930 (45.00%) patients had genital ulcer (including herpes genitals) with or without skin manifestations, 690 (16.09%) had urethral discharge, 431 (10.05%) had genital warts, 349 (8.14%) had lesions other than STIs related, 304 (7.08%) had more than one syndrome, 193 (4.50%) had scrotal swelling, 46 (1.07%) had inguinal bubo, 3 (0.06%) were human immunodeficiency virus (HIV) positive, and 1 (0.02%) had ophthalmia neonatorum. Based on the clinical and etiological grounds: 2560 (59.70%) had syphilis, 640 (14. 92%) had gonorrhoea, 399 (9.30%) had mixed infections, 40 (0.93%) had chancroid, 431 (10.05%) had genital warts, 40 (0.93%) had lymphogranuloma venerum (LGV) and granuloma inguinale (GI), 3 (0.06%) were HIV positive, 208 (4.85%) had genital herpes, 120 (2.79%) had orchitis, 56 (1.30%) had non gonococcal urethritis (chlamydia were 19), and 1 (0.02%) had ophthalmia neonatorum. **Conclusions** Mode of transmission of STIs in this region is mainly by heterosexual contact and syphilis is the commonest followed by gonorrhoea.

Keywords: Sexually Transmitted Infections, Hetrosexuality, Pattern, Sindh Province, Pakistan

INTRODUCTION

Sexually Transmitted Infections (STIs) are the group of infectious diseases, which are principally transmitted through sexual intercourse, although some of these diseases may be transmitted through non-sexual means like transfusion of infected blood, use of contaminated syringes and needles, and from infected mother to her baby (vertical transmission). STIs may be classified into curable and incurable infections. Syphilis, gonorrhoea, chlamydia, trichomoniasis and chancroid are among the curable infections; however, human immunodeficiency virus (HIV), herpes simplex virus and hepatitis B virus are considered as incurable infections (now-a-days hepatitis B virus is considered as curable infection). STIs develop a significant public health problem especially in developing countries. The World Health Organization (WHO) estimates the global incidence of new cases of selected curable STIs to be 333 million in every year.[1] In another report, WHO has warned that 1 in 20 adolescents throughout the world will contract curable STIs.[2] This number illustrates the importance of preventing risk behaviours among adolescents, in particular those related to sex.

Surveillance data are very essential for understanding and controlling the increasing incidence of STIs in Europe and many other countries.[3] In most of European countries, various complementary STIs surveillance systems are going on, and case reporting is mandatory for syphilis, gonorrhoea, hepatitis B and C in these countries;[4] but, due to lack of proper organized STI reporting system in Pakistan, the published data is insufficient to understand the prevalence of STIs in this country. In our neighbouring state India, lot of specific centres are working on HIV/AIDS and STIs in the different parts of the country and they have various reporting trends of these infections in each part of the country[5–6], on the other hand, we could not find any single report in literature on this matter from our other neighbouring states like Iran and Afghanistan.

Here, we will present our 10-year experience with the STIs patients residing in the interior part of Sindh province Pakistan. To our knowledge, this is the first prospective precise study from Pakistan especially rural areas of Sindh province that provides clinical data on STIs from this region which will help to understand the number and pattern of STIs in our community.

PATIENTS AND METHODS

This study was conducted at Male-STD Clinic in the Department of Dermatology, Shaheed Muhtarma Benazir Bhutto Medical University Hospital Larkana, Pakistan. A total of 4,288 patients were seen in this semi urban area during a 10-year-period from January 2000 to December 2009. The way of referral of patients to our Male-STD clinic was through general practitioners, rural health centres, Non-Government Organization (NGOs) working on prevention of HIV/AIDS. A structured questionnaire presenting the details of syndromic diagnosis was filled during the examination of each patient. All cases were registered on the basis of syndromic diagnosis as well as, for our ease and understanding, were also grouped on the basis of clinical and aetiological diagnosis.

The suspected cases of syphilis were investigated by laboratory investigations of venereal disease research laboratories (VDRL), *Treponema pallidium* haemagglutinin (TPHA), FTA-ABS and direct microscopy; the chancroid cases by performing the gram staining and bacterial culture for *Haemophilus* (H) Ducrey; the gonorrhoea cases by performing the gram staining and urine culture for *Neiserria* (N) gonorrhoea; and other cases like LGV and GI by detection of Donovan bodies on smear test. Viral infections like *Herpes genitalis*, genital warts were diagnosed clinically. Those who had the symptoms of urethritis (but negative for *N. gonorrhea*) were labelled as non-gonoccocal urethritis. Non-gonoccocal urethritis cases were further investigated for *Chlamydia trachomatis* by performing the culture.[7] All cases were screened for HIV and these patients including their affected spouses were treated according to the treatment protocol recommended by Sindh AIDS control program.

RESULTS

A total of 4,288 patients were seen in a 10-year-period. Clinically, most of the syphilis cases were seen in the stage of secondary syphilis by presenting the typical ulcerative lesions on penis and scrotum and bilateral itch-less maculopapular eruptions on palms, arms and feet. A single rounded ulcer was often visible on the shaft of penis in chancroid cases. White milky discharge on the external urethral meatus in gonorrhoea cases was observed. Clinical findings in rest of the cases were the usual ones.

Among 4,288 patients, 3,947 (92.04%) cases had the history of extra marital sexual contact and simultaneously had developed the clinical signs of STIs; 341 (7.95%) cases had history of extra marital sexual contact but they did not have clinical manifestation of STIs. These cases had lesions similar to STIs particularly on genital areas due to topical application of medicines, condom allergy, sexual trauma etc. When they were tested, all were negative for STIs. The yearly visiting number of patients is summarised in Table-1. The age range of patients was 1–55 years (mean=28 years). The patients were divided in 5 age groups: group A (below 1 year), 1 (0.02%) case of ophthalmia neonatorum was seen in this group; group B (1–4 years age), 1 (0.02%) case; group C (5–17 years), 209 (4.87%) cases; group D (18–44 years), 3,205 (74.74%) patients; and group E (above 45 years), 872 (20.33%) cases; (Table-2).

According to syndromic diagnosis, 1,930 (45.00%) cases had genital ulcer (including herpes genitals) with or without skin manifestations; 690 (16.09%) had urethral discharge; 431 (10.05%) had genital warts; 349 (8.14%) had other STIs related lesions; 304 (7.08%) had more than one syndrome; 193 (4.50%) had scrotal swelling; 46 (1.07%) had inguinal bubo; 3 (0.06%) were HIV positive; and 1 (0.02%) had ophthalmia neonatorum (Table-3).

On the basis of clinical and aetiological diagnosis, the number of syphilis patients was 2,560 (59.70%); gonorrhoea patients were 640 (14.92%); mixed infections were 399 (9.30%); chancroid were 40 (0.93%); genital warts were 431 (10.05%); LGV and GI were 40 (0.93%); HIV positive were 3 (0.06%); genital herpes were 208 (4.85%); orchitis were 120 (2.79%); non-gonococcal urethritis were 56 (1.30%); and ophthalmia neonatorum was 1 (0.02%) (Table-4).

Among the 56 non-gonococcal urethritis cases 19 were culture positive for *Chlamydia trachomatis*, 37 were mixed urethral infections other than chlamydia. All patients (3,947) were divided into 4 groups on the basis of mode of sexual contact. Group 1, extramarital sexual contact with female sex workers/prostitutes 3,560 (82.99%); group 2, sexual contact with females but refused to provide details of partners 300 (6.99%); group 3, sexual contact with both male and female 257 (5.99%); group 4, sexual contact only with males 171 (3.98%).

Table-1: Yearly distribution of STIs patients (n=4,288)

Year	Number	%
2000	410	9.56
2001	361	8.42
2002	229	5.34
2003	292	6.8
2004	360	8.39
2005	292	6.8
2006	523	12.2
2007	428	10.0
2008	658	15.35
2009	735	17.14

Table-2: distribution of patients in five age groups

Age Group Years	Number	Percentage
Group-A (<1)	1	0.02
Group-B (1–4)	1	0.02
Group-C (5–17)	209	4.87
Group-D (18–44)	3204	74.74
Group-E (>45)	872	20.33

Table-3: Distribution of STIs patients on the basis of syndromic diagnosis (n=4,288)

Basic Diagnosis	Number	Percentage
Urethral discharge	690	16.09
Scrotal swelling	193	4.5
Genital Ulcer	1930	45.0
Genital Wart	431	10.05
Inguinal bubo	46	1.07
Ophthalmia Neonatorum	1	0.02
HIV Positive	3	0.06
>One syndrome	304	7.08
Other STIs related	349	8.14
H/O Sexual contact but no STIs	341	7.95

Table-4: Distribution of STIs patients on the basis of clinical and aetiological grounds (n=4288)

Diagnosis	Number	Percentage
Syphilis	2560	59.70
Gonorrhoea	640	14.92
Mixed infections	399	9.30
Chancroid	40	0.93
Genital warts	431	10.05
LGV and GI	40	0.93
HIV positive	3	0.06
Genital herpes	208	4.85
Orchitis	120	2.79
Non-gonococcal urethritis	56	1.30
Ophthalmia neonatorum	1	0.02

DISCUSSION

Pakistan is an Islamic and male dominated state. The huge number of male patients in this semi urban region indicates high prevalence of STIs which is quite a serious health problem. Though our study is concerned with male gender but in the light of our results it is supposed that the number of STIs in females might be higher because majority of our patients had history of extramarital heterosexual contact with female sex workers/prostitutes, but only small number of patients had history of homosexual contact including male transgender. If the preventive measures were not taken, the country may have to face a big epidemic of STIs and HIV/AIDS. In this regard, use of mass media and peer education strategies should be formulated to raise the levels of awareness and knowledge about STIs and HIV/AIDS.

According to WHO reports, approximately 340 million new cases of the four main curable STIs, i.e., syphilis, gonorrhoea, chlamydal infection and trichomoniasis occur every year, and 75□80% of them are in developing countries.[8] Our data showed that the number of syphilis patients was higher than other common STIs. These findings are consistent with earlier reports from urban, sub-urban, and rural settings in Washington where the primary and secondary syphilis was observed most concentrated STI, followed by gonorrhoea, chlamydial infection and initial episodes of genital herpes.[9]

The differences in concentration of STIs may vary from one country to another country. Ray *et al.*[10] observed the significant rise of syphilis and other viral infections like herpes genitalis and genital warts in regional STD centre in north India; however, there was a reduction in that of chancroid, LGV, donovanosis, candidiasis, trichomoniasis, and bacterial vaginosis. A retrospective study was carried out from a tertiary care centre at Puducherry, India in which authors observed that herpes genitalis was the most common ulcerative STI (32.8%) while genital wart was the most common non-ulcerative STI (17.1%) in their patients. Among their patients, non-gonococcal urethritis was more common (14.1%) than the gonococcal urethritis, and surprisingly, HIV infection was the most common STI (34.5%).[11] In contrast, the number of our gonococcal urethritis patients was more than the non-gonococcal urethritis, and the number of HIV positive patients was low. When the prevalence and mode of transmission in male STIs was studied in four main cities of Pakistan, it was observed that out of 465 cases, 31.6% had syphilis, 27.5% gonorrhoea, 17.2% chancroid, 18.2% herpes genitalis, and 5.2% chlamydia infections, while only one (0.2%) patient was HIV positive. Among these patients, 55% patients acquired the infection by heterosexually, 11.6% through homosexually and 18.4% through bisexual relations. They noticed that their STIs patients were elder, married and living with their families, while, the affecters of STIs in developed countries are mostly younger persons, unmarried and living alone. The authors concluded that the pattern of Pakistani STI patients is different from those of developed countries.[12]

The pattern and frequencies of STIs may vary from one part to another part of the country. A hospital based study was conducted on STIs in gynecology department at Bolan Medical Complex Hospital of Balochistan province. By using the questionnaire, 500 female patients were examined by performing the various tests along with the High Vaginal Swab (HVS) taken from posterior fornix of patients` vagina. It was observed that women with vaginal discharge had higher incidence of STIs (84%) than without it (38%). The vaginitis was 33.48%, bacterial vaginosis was 30.7%, candidiasis was 10%, trichomoniasis was 7.2%, gonorrhoea was 1.35% and 1 case each of LGV and chancroid was seen.[13] Surprisingly no single case of syphilis, HIV/AIDS or genital herpes was seen in these female patients. In contrast, our male patients represents syphilis 59.7% (2560/4288), gonorrhoea 14.9% (640/4288), genital herpes 4.8% (208/4288), chlamydia trachomatis 0.4% (19/4288), chancroid 0.9% (40/4288), LGV & GI 0.9% (40/4288), and HIV positive 0.06% (3/4288). These findings allow us to conclude that the pattern of female STIs is quite different from male STIs in Pakistan.

There has been close association between STIs and viral infections. In order to investigate the prevalence of HIV and STIs, study was carried out in male transgenders (*Hijras*) in Pakistan.

It was observed that among 409 cases, 58% had STIs and 38% had multiple infections. The syphilis was present in 50% and gonorrhoea in 18%. Despite the knowledge about the use of condoms, only few of them used the condoms while 84% had sold sex. Male transgender may have central role in the epidemic of HIV in Pakistan.[14] When a study was conducted in 2400 urban men, aged 16–45 years, from six cities of Pakistan, it was observed that the prevalence of syphilis was 1.3%, HIV was 0.1%, herpes simplex virus (HSV-2) was 3.4%, gonorrhoea was 0.8% and Chlamydia was 0.0%. The highest prevalence was seen in Karachi as 8.5%, where as in Lahore 5.3%, Faisalabad 4.0%, Quetta 4.3%, Rawalpindi 2.5%, and Peshawar 2.0%. The authors concluded that HIV prevalence in Pakistan remains low; where as the genital herpes (HSV-2) is a matter of concern because it may lead to HIV spread.[15] The prevalence of genital herpes (HSV-2) in our semi urban patients was more than 5%, which is quite low in comparison to other STIs like syphilis more than 60%, gonorrhoea about 15% and genital warts 8.14%. These differences indicate that the prevalence of urban STIs might be different from semi urban STIs in Pakistan. Most of our patients had the history of poor socioeconomic conditions and belonged to rural and semi urban areas. Majority of them were farmers, labour class, drivers, uneducated and jobless people. These results also favour that STIs are more prevalent in rural and semi urban areas rather than the cities.

Many European countries have various complementary STIs surveillance systems going on, and, the case reporting is mandatory for syphilis, gonorrhoea, hepatitis B and C in these countries.[4] Due to the increasing incidence of STIs, many countries have adopted a system of the pre-employment investigations of STIs before providing the employment in their countries. The purpose is to control the further spread of STIs in the country. When a random study was conducted to determine the STIs in domestic expatriate workers (DEWs) in Jeddah, Saudi Arabia, it was found that among the 1648 workers, 23.8% had the syphilis while 19% workers were HIV positive.[16]

There are few genuine reasons for the increase of STIs in community: 1) Lack of proper knowledge and attitude towards the STIs; 2) Ignorance and lack of compliances towards advises given by medical specialists and doctors like the use of condoms; 3) Inadequate treatment. To assess the knowledge and beliefs about STIs and HIV/AIDS, a survey was conducted in youngsters aged between 15 to19 years in district Mirpurkhas, Pakistan. Among the 428 girls and boys, only 44% correctly named at least one STI, while 55% knew at least two modes of transmission for HIV/AIDS. Authors concluded that rural adolescents of Sindh province need more knowledge regarding STIs and HIV/AIDS.[17] In a survey conducted in Karachi urban city of Pakistan in the specialists like dermatologists, gynaecologists, urologists and general practitioners (GPs), one hundred doctors were interviewed by administering the structured questionnaires. It was observed that GPs were deficient in appropriately managing and counselling STIs patients and it was proposed that GPs need education in treating the STIs properly.[18]

Even the knowledge of HIV/STIs is high among the vulnerable population but the compliance to the advice given from health care providers like usage of condom is very low.[19] A comparative five year study was performed to know the behavioural change through knowledge, attitudes and awareness of HIV aimed to prevent the HIV and other STIs in Mombasa Kenya. It was observed that the ratio of STIs/HIV infection was low in female sex workers (FSW) who were educated for the STIs/HIV preventive measures and used the condoms than those who did not get the education.[20] It is suggested that the similar education programs would be very helpful in decreasing the ratio of STIs in Pakistan.

Larkana city has been considered epidemic for the HIV/AIDS because hundreds of cases of HIV/AIDS have been reported[21], however, the number of HIV positive cases in our study was low as 3, because the HIV/AIDS reporting centre is located at separate place.

CONCLUSION

STIs are growing concern and a public health problem in the central part of Sindh province of this Muslim state, and syphilis exist in the highest level of concentration followed by gonorrhoea and so on. Community needs to be educated for adopting the safe sex measures to prevent the STIs. As for as Hepatitis B and C is not directly related with the STIs, but, because of the reports on association of HIV, HCV and STIs[22], it is strongly recommended that all the cases of STIs must be screened for Hepatitis B and C in future. In this regard, further studies are required. We also recommend that the effective HIV/STIs surveillance/control program must be started in the country; and community needs to be educated for the safe sex education to prevent the STIs.

REFERENCES

1. Jrondi S, Mahjour J. New strategies for control of STD in Morocco. EMR AIDS News 1998;2:2–4.
2. World Health Organization: Young people and sexually transmitted diseases. Fact sheets. Geneva, Switzerland 1997. Available at: https://apps.who.int/inf-fs/en/fact186.html
3. Lowndes CM, Fenton KA. European surveillance of STI`s network: Surveillance systems for STI`s in the European Union: facing a changing epidemiology. Sex Transm Infect 2004;80:264–71.
4. Defraye A, Sasse A. STI surveillance by a sentinel network of physicians in Belgium. Acta Clin Belg 2005;60(2):70–4.
5. Khanna N, Pandhi RK, Lakhn PS. Changing trends in sexually transmitted diseases in Chandigarh. Indian J Sex Transm Dis 1996;17:79–81.

6. Narayanan B. A retrospective study of the pattern of sexually transmitted diseases during a ten year period. Indian J Dermatol Venereol Leprol 2005;71:333–7.
7. Bowie WR, Wang SP, Alexander ER Floyd J, Forsyth PS, Pollock HM, *et al*. Etiology of nongonococcal urethritis. Evidence for Chlamydia trachomatis and ureaplasma urealyticum. J Clin Invest 1977;59):735–42.
8. Global prevalence and incidence of selected curable sexually transmitted infections: Overviews and estimates. WHO/HIV-AIDS/2001-02. Geneva: World Health Organization, 2001.
9. Kerani RP, Handcock MS, Handsfield H, Holmes KK. Comparative geographic concentrations of 4 sexually transmitted infections. Am J Public Health 2005; 95:324–30.
10. Ray K, Bala M, Gupta SM, Khunger N, Puri P, Muralidhar S, *et al*. Changing trends in sexually transmitted infections at a regional STD centre in north Indian. Indian J Med Res 2006;124:559–68.
11. Barna Devi SA, Vetrichevvel TP, Pise GA, Thappa DM. Pattern of sexually transmitted infections in a tertiary care centre at Puducherry. Indian J Dermatol 2009;54:347–9.
12. Rehan N. Profile of men suffering from sexually transmitted infections in Pakistan. J Pak Med Assoc 2006;56:S60–5.
13. Sami S, Baloch SN. Vaginitis and Sexually Transmitted Infections in a hospital based study. J Pak Med Assoc 2005;55:242–4.
14. Khan AA, Rehan N, Qayyum K, Khan A. Correlates and prevalence of HIV and sexually transmitted infections among *Hijras* (male transgenders) in Pakistan. Int J STD AIDS 2008;19:817–20.
15. Mir AM, Wajid A, Reichenbach L, Khan M. STI prevalence and associated factors among urban men in Pakistan. Sex Transm Infect 2009;85:199–200.
16. Hamdi SA, Ibrahim MA. Sexually transmitted diseases in domestic expatriate workers in Jeddah, Saudi Arabia. Ann Saudi Med 1997;17(1):29–31.
17. Raheel H, White F, Kadir MM, Fatmi Z. Knowledge and beliefs of adolescents regarding sexually transmitted infections and HIV/AIDS in a rural district in Pakistan. J Pak Med Assoc 2007;57(1):8–11.
18. Khandwalla HE, Luby S, Rehman S. Knowledge, attitudes and practices regarding sexually transmitted infections among general practitioners and medical specialists in Karachi. J Pak Med Assoc 2006;56(1 Suppl-1):S31–3.
19. Saleem NH, Adrien A, Razaque A. Risky sexual behavior, knowledge of sexually transmitted infections and treatment utilization among a vulnerable population in Rawalpindi, Pakistan. Southeast Asian J Trop Med Public Health 2008;39:642–8.
20. Luchters S, Chersich MF, Rinyiru A, Barasa MS, King'ola N, Mandaliya K, *et al*. Impact of five years of peer-mediated interventions on sexual behavior and sexually transmitted infections among female sex workers in Mombasa, Kenya. BMC Public Health 2008;8:143–52.
21. Soomro FR. HIV/AIDS control in Larkana/Kamber Shahdadkot District, Sindh –Report of meeting at District Government Secretariat, Larkana in collaboration with UNICEF and NACP. Infect Dis J 2005;14(2):66–7.
22. Platt L, Vickerman P, Collumbien M, Hasan S, Lalji N, Mayhew S, *et al*. Prevalence of HIV, HCV, and sexually transmitted infections among injecting drug users in Rawalpindi and Abbottabad, Pakistan: evidence for an emerging injection-related HIV epidemic. Sex Transm Infect 2009;85(Suppl 2):ii17–22.

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