



Original Research Article

SEXUALLY TRANSMITTED INFECTIONS WITH DERMATOLOGICAL PRESENTATIONS: A CLINICO-EPIDEMIOLOGICAL STUDY

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ABSTRACT

Background: Sexually transmitted infections frequently present with cutaneous and mucocutaneous manifestations that may provide the earliest indication of underlying disease. Early recognition of these findings is essential for timely diagnosis, appropriate treatment, partner management, and prevention of transmission. The objective is to evaluate the clinico-epidemiological profile, dermatological presentations, associated risk factors, laboratory findings, and treatment outcomes of sexually transmitted infections.

Materials and Methods: This retrospective observational study was conducted at Command Hospital Pune from Oct 25 to March 2026 and included 40 patients diagnosed with sexually transmitted infections presenting with dermatological manifestations.

Results: The mean age of patients was 31.6 ± 8.9 years, and 28 (70.0%) were male. Multiple sexual partners were reported by 18 (45.0%) patients, while 27 (67.5%) reported inconsistent condom use. Genital ulcers were the most common dermatological presentation, affecting 15 (37.5%) patients, followed by genital warts in 10 (25.0%), vesicular lesions in 8 (20.0%), and papular lesions in 7 (17.5%). Syphilis was the leading diagnosis in 12 (30.0%) patients, followed by genital herpes in 10 (25.0%), human papillomavirus infection in 9 (22.5%), chancroid in 5 (12.5%), and molluscum contagiosum in 4 (10.0%). Complete clinical resolution was achieved in 33 (82.5%) patients, while recurrence occurred in 6 (15.0%). Recurrence was significantly associated with HIV positivity (50.0% vs. 2.9%; $p < 0.001$), multiple sexual partners (83.3% vs. 38.2%; $p = 0.042$), inconsistent condom use (100.0% vs. 61.8%; $p = 0.048$), and genital herpes (66.7% vs. 17.6%; $p = 0.014$).

Conclusion: Sexually transmitted infections with dermatological manifestations predominantly affected young adult males and commonly presented as genital ulcers, genital warts, and vesicular lesions. Syphilis and genital herpes were the leading diagnoses. HIV infection, multiple sexual partners, inconsistent condom use, and genital herpes were significantly associated with recurrence. Early diagnosis, appropriate therapy, partner management, and promotion of safer sexual practices are essential for improving outcomes and reducing transmission.

Keywords: Sexually transmitted infections, dermatological manifestations, syphilis, genital herpes, human papillomavirus, genital ulcers, recurrence.

INTRODUCTION

Sexually transmitted infections (STIs) are a significant public health problem worldwide and are significant drivers of morbidity, reproductive problems, health care costs and ongoing

transmission in the community.^[1] The pathogens include bacteria, viruses, fungi and parasites, and the infections are manifested in the genital, mucosal, skin, and/or systemic areas. Some STIs do not have symptoms until later in the infection, but the dermatological symptoms may be the first symptom

or sign of the infection and may encourage the individual to seek medical care.^[2] There are many different STDs with different skin signs and symptoms. Primary syphilis may present as a painless lesion of the genitalia, and secondary syphilis as generalized papulosquamous lesions of the palms and soles.^[3] The clinical presentation of genital herpes is usually a cluster of grouped vesicles, erosions, or recurrent ulcers; in contrast, the clinical presentation of human papillomavirus (HPV) infection is often with the presence of genital or perianal warts.^[4] Other diseases such as chancroid, molluscum contagiosum, lymphogranuloma venereum, granuloma inguinale and human immunodeficiency virus (HIV) associated dermatoses can also form characteristic mucocutaneous lesions.^[5] It is important to be aware of these results to enable timely treatment, partner notification and to prevent further spread. Age, gender, socioeconomic status, education, sexual activity, number of sexual partners, condoms, health care and cultural practices are all factors that affect the epidemiology of STIs.^[6] There is also a high risk of exposure among young adults, people who have multiple sex partners, people who have recently had sex without a condom, commercial sex workers and immunocompromised individuals.^[7] Social stigma, embarrassment, lack of awareness and fear of disclosure, especially in conservative societies are important factors that contribute to delayed presentation.^[8]

Accurate diagnosis of the lesions involves attention to their form, location, duration, associated lymphadenopathy, discharge, pain, and systemic illness.^[9] But, it is important to remember that there could be some overlap with other dermatologic diseases, which may make diagnosis difficult. A serological test, nucleic acid amplification tests, polymerase chain reaction, microscopy, culture and histopathology may therefore be necessary to confirm the diagnosis in the laboratory.^[10] Infections that are not treated can result in pelvic inflammatory disease, infertility, ectopic pregnancy, chronic pelvic pain, neonatal infection, urethral stricture, neurological sequelae, cardiovascular complications and HIV susceptibility.^[11] Recent evidence also suggests that syphilis has returned and that viral diseases like sex transmitted infections such as genital herpes and human papillomavirus infection are still prevalent.^[12] However, in Pakistan, reliable data on STIs are limited due to underreporting, poor surveillance, lack of sexual health services and sociocultural factors that hinder reporting of STIs.^[13] The presentation of patients to dermatologists is very often through the sign of a visible lesion, as opposed to genitourinary symptoms, and hence a dermatological evaluation plays an important role in early detection.^[14] Knowing the local clinical patterns and associated risk factors could help better diagnose the condition and tailor health education and preventive interventions to the individual.^[15]

Objective

To evaluate the clinico-epidemiological profile, dermatological presentations, associated risk factors, laboratory findings, and treatment outcomes of sexually transmitted infections.

MATERIALS AND METHODS

This retrospective observational study was conducted at Command Hospital Pune from Oct 25 to March 2026 and included 40 patients diagnosed with sexually transmitted infections (STIs) presenting with dermatological manifestations. Patients aged 18 years or older of either gender with clinically suspected and laboratory-confirmed sexually transmitted infections presenting with cutaneous or mucocutaneous manifestations were included. Only patients with complete clinical records and follow-up information were considered eligible for analysis. Patients with non-sexually transmitted dermatological disorders, incomplete medical records, uncertain diagnosis, previous treatment before presentation, immunobullous diseases, drug-induced skin eruptions, or refusal to permit the use of medical records for research purposes were excluded.

Data Collection

Following approval from the Institutional Ethical Review Committee, patient data were retrieved from hospital medical records, dermatology outpatient records, sexually transmitted infection clinic registers, laboratory databases, and follow-up files using a standardized data collection form. Baseline demographic variables included age, gender, marital status, occupation, educational status, residence, smoking status, history of multiple sexual partners, condom use, previous history of sexually transmitted infections, and associated comorbidities including HIV infection and diabetes mellitus. Clinical variables included duration of symptoms, presenting complaints, type and distribution of dermatological lesions, genital ulcers, genital warts, vesicular lesions, papules, plaques, discharge, pruritus, pain, inguinal lymphadenopathy, oral lesions, systemic manifestations, and final clinical diagnosis. Laboratory investigations included Venereal Disease Research Laboratory (VDRL) test, Treponema pallidum hemagglutination assay (TPHA), HIV serology, hepatitis B surface antigen (HBsAg), hepatitis C virus (HCV) serology, herpes simplex virus testing where indicated, Gram stain, potassium hydroxide preparation, bacterial culture, and polymerase chain reaction or nucleic acid amplification tests when available. The primary outcome was the distribution of dermatological manifestations among patients with sexually transmitted infections. Secondary outcomes included the frequency of different sexually transmitted infections, associated demographic and behavioral risk factors, laboratory findings, treatment

administered, clinical response to therapy, recurrence, and treatment-related complications.

Statistical Analysis

Data were analyzed using SPSS version 26.0. Continuous variables were expressed as mean $\pm$ standard deviation, whereas categorical variables were presented as frequencies and percentages. Chi-square test was used to compare categorical variables, while independent *t*-tests or Mann-Whitney *U* tests were used for continuous variables where appropriate. Variables demonstrating statistical significance in univariate analysis were entered into a multivariable logistic regression model to identify independent factors associated with recurrent or complicated sexually transmitted infections. Odds ratios (ORs) with 95% confidence

intervals (CIs) were calculated, and a *p*-value ≤ 0.05 was considered statistically significant.

RESULTS

The mean age of the 40 patients was 31.6 ± 8.9 years, with males forming the majority (28, 70.0%). Most patients were married (24, 60.0%) and lived in urban areas (26, 65.0%). Multiple sexual partners were reported by 18 (45.0%), while inconsistent condom use was common in 27 (67.5%). Previous STI history and HIV positivity were present in 9 (22.5%) and 4 (10.0%) patients, respectively. The mean symptom duration was 4.7 ± 2.6 weeks.

Table 1: Demographic and Clinical Characteristics of Patients with Sexually Transmitted Infections (N = 40)

Variable	n (%) / Mean $\pm$ SD
Age (years)	31.6 $\pm$ 8.9
Male	28 (70.0)
Female	12 (30.0)
Married	24 (60.0)
Urban residence	26 (65.0)
History of multiple sexual partners	18 (45.0)
Inconsistent condom use	27 (67.5)
Previous STI history	9 (22.5)
HIV positive	4 (10.0)
Symptom duration (weeks)	4.7 $\pm$ 2.6

Genital ulcers were the most frequent dermatological presentation, occurring in 15 (37.5%) patients, followed by genital warts in 10 (25.0%), vesicular lesions in 8 (20.0%), and papular lesions in 7 (17.5%). Pruritus and painful lesions were reported in 18 (45.0%) and 16 (40.0%)

patients, respectively. Syphilis was the most common diagnosis (12, 30.0%), followed by genital herpes (10, 25.0%), HPV infection (9, 22.5%), chancroid (5, 12.5%), and molluscum contagiosum (4, 10.0%).

Table 2: Clinical and Dermatological Presentations of Sexually Transmitted Infections

Variable	n (%)
Genital ulcers	15 (37.5)
Genital warts	10 (25.0)
Vesicular lesions	8 (20.0)
Papular lesions	7 (17.5)
Pruritus	18 (45.0)
Painful lesions	16 (40.0)
Genital discharge	12 (30.0)
Inguinal lymphadenopathy	11 (27.5)
Oral mucosal lesions	5 (12.5)
Syphilis	12 (30.0)
Genital herpes	10 (25.0)
Human papillomavirus infection	9 (22.5)
Chancroid	5 (12.5)
Molluscum contagiosum	4 (10.0)

Laboratory findings confirmed syphilis in 12 (30.0%), herpes simplex virus infection in 10 (25.0%), and HPV infection in 9 (22.5%) patients. HIV, hepatitis B, and hepatitis C positivity were detected in 4 (10.0%), 3 (7.5%), and 2 (5.0%)

patients, respectively. Complete clinical resolution was achieved in 33 (82.5%), partial improvement in 5 (12.5%), and recurrence occurred in 6 (15.0%). The mean treatment duration was 3.9 ± 1.5 weeks.

Table 3: Laboratory Findings and Treatment Outcomes

Variable	n (%) / Mean $\pm$ SD
Positive VDRL/TPHA	12 (30.0)
Positive HSV testing	10 (25.0)
Positive HPV diagnosis	9 (22.5)
HIV seropositivity	4 (10.0)

HBsAg positive	3 (7.5)
HCV positive	2 (5.0)
Complete clinical resolution	33 (82.5)
Partial improvement	5 (12.5)
Recurrence during follow-up	6 (15.0)
Mean treatment duration (weeks)	3.9 ± 1.5

Recurrence was strongly associated with HIV positivity (50.0% vs. 2.9%; $p < 0.001$), multiple sexual partners (83.3% vs. 38.2%; $p = 0.042$), inconsistent condom use (100.0% vs. 61.8%; $p = 0.048$), and genital herpes (66.7% vs. 17.6%;

$p = 0.014$). Patients with recurrence also required longer treatment (5.3 ± 1.4 vs. 3.7 ± 1.3 weeks; $p = 0.021$) and had a much lower rate of complete clinical resolution (33.3% vs. 91.2%; $p < 0.001$).

Table 4: Comparison Between Patients With and Without Disease Recurrence

Variable	Recurrence (n=6)	No Recurrence (n=34)	p-value
Age (years), Mean ± SD	35.8 ± 7.4	30.9 ± 9.1	0.183
HIV positivity, n (%)	3 (50.0)	1 (2.9)	<0.001
Multiple sexual partners, n (%)	5 (83.3)	13 (38.2)	0.042
Inconsistent condom use, n (%)	6 (100.0)	21 (61.8)	0.048
Genital herpes, n (%)	4 (66.7)	6 (17.6)	0.014
Mean treatment duration (weeks)	5.3 ± 1.4	3.7 ± 1.3	0.021
Complete clinical resolution, n (%)	2 (33.3)	31 (91.2)	<0.001

DISCUSSION

The present clinico-epidemiological study of the dermatological involvement of sexually transmitted infections (STIs) involved 40 patients and concluded that young adult males were the more numerous group of patients. The most common dermatological signs and symptoms were genital ulcerations and genital warts, and the most common etiological diagnoses were syphilis and genital herpes. HIV infection, having multiple sexual partners, inconsistent condom use, and genital herpes were also found to be important factors associated with a recurrence of disease. The results highlight the need for thorough dermatological assessment, prompt diagnosis, and lifestyle change in the treatment of STI. The mean age of the studied population was 31.6 ± 8.9 years and 70.0% was males. The majority of patients were married, and lived in urban settings. Almost half said they had more than one sexual partner and two-thirds said that they sometimes did not use condoms. Twenty-two and a half percent (22.5%) of patients had a history of STI prior to the current presentation and 10.0% were HIV co-infected. The same study group has also previously published that the majority of people infected with STIs are young adults, mostly men, who engage in risky sexual behaviors, such as multiple sexual partners, being the major epidemiological risk factors.^[16] The most frequently seen dermatological feature was genital ulcers, followed by genital warts, vesicular lesions and papular lesions. Pruritus and painful lesions were common presenting symptoms and genital discharge and inguinal lymphadenopathy were seen in a significant number of patients. Previous studies have also shown that genital ulcers, genital warts, vesicular lesions and papular lesions are the most common dermatological symptoms of the STIs and are often the first reason for a healthcare

consultation. Syphilis, genital herpes, HPV infection, chancroid, and molluscum contagiosum were the most common infections diagnosed. Laboratory tests revealed 89, 90, and 95% positivity respectively for VDRL/TPHA, HSV, and HPV that matched the clinical diagnosis. Studies have also shown that the most common sexually transmitted infections (STIs) in dermatology and sexually transmitted disease clinics are syphilis, genital herpes, and that viral infections are becoming more common in recent years.^[17] The overall treatment results were good, and 82.5% of patients achieved complete clinical resolution after 3.9 ± 1.5 weeks of treatment. A small percentage showed some improvement or reoccurrence post-treatment. Previous studies have also demonstrated that the prompt identification of STIs and their appropriate antibiotic or antiviral treatment with guidelines can yield high clinical cure rates in most STIs except viral infections, which are still susceptible to recurrence due to the latent infection.

There were several clinically important findings identified from a comparison between patients who had recurrence and those who did not. Patients with recurrence were significantly more likely to be HIV positive, have multiple sexual partners, not using condoms and having genital herpes. Additionally, those who developed a recurrence needed significantly longer treatment and had significantly lower complete clinical resolution rates. Similarly, in the past, HIV-associated immunosuppression, continuous high-risk sexual activity, and herpes simplex virus infection have been shown to be significant risk factors for recurrent disease and a longer duration of treatment.^[18] The high proportion of HIV infection among people with recurrence in this study suggests that the low immune function is linked to STIs. People with HIV are likely to have more serious infections, impaired healing, recurrent infections, and develop more complicated infections. The study also found that HIV infection

was another well-known risk factor associated with recurrent, persistent and atypical STI dermatological presentations, consistent with previous studies. Other factors, including behavioural factors, contributed significantly to the recurrence of the disease. Patients who reported that they had multiple sex partners or that condoms were not used consistently were significantly more likely to have had a recurrence than those who had engaged in safer sexual behavior. Reinfection and continued disease transmission was likely due to continued exposure to infected partners and lack of barrier protection. Previous studies have also highlighted the significant reduction in recurrence and breaking the community transmission of STIs that can be achieved with regular condom usage, partner notification, and behavioral counselling.^[19] Another important factor that affected recurrence in the present study was genital herpes. Whereas bacterial STDs remain in the bloodstream and can be treated with antibiotics, HSV can remain in the body in a latent state in sensory ganglia and can be reactivated in the future even with antiviral therapy. Stress, illness or immunosuppression have been well documented to cause periodic viral reactivation which is a major cause of recurrent genital ulcer disease, and genital herpes has consistently been shown to be one of the major causes of recurrent genital ulcer disease.^[20] The findings of this study have important public health implications. An early diagnosis of dermatological symptoms enables prompt diagnosis, laboratory confirmation, proper treatment, partner management and safe sexual practices counseling. Combined assessments of STI, HIV, and patient education with dermatologic services has the potential to markedly decrease the transmission of disease and to enhance long term outcomes. Previous studies have also stressed that coordinated, comprehensive treatment of the clinical, laboratory, behavioral, and public health aspects is the most effective way to reduce STIs. This study was limited by its retrospective, single-center design and small sample size of 40 patients, which may limit the generalizability of the findings. Reliance on medical records may have resulted in incomplete documentation of behavioral risk factors and follow-up data. Additionally, the relatively short follow-up period limited the assessment of long-term recurrence and treatment outcomes.

CONCLUSION

Sexually transmitted infections with dermatological manifestations predominantly affected young adult males and most commonly presented as genital ulcers, genital warts, and vesicular lesions. Syphilis and genital herpes were the leading diagnoses, with most patients achieving complete clinical resolution following appropriate treatment. HIV infection, multiple sexual partners, inconsistent condom use, and genital herpes were significantly associated with

disease recurrence. Early recognition of dermatological manifestations, prompt laboratory confirmation, appropriate therapy, partner management, and promotion of safe sexual practices are essential for reducing recurrence, preventing complications, and limiting the transmission of sexually transmitted infections.

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