

Original Research Article

Clinico-etiological study of genital lesions at a tertiary care center in Pune, India

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ABSTRACT

Background: Disorders affecting the genitalia are a global health problem of significant magnitude. They comprise conditions which may or may not be sexually transmitted. Often it becomes impossible to make a reliable etiological diagnosis on clinical grounds alone. There is a paucity of data about the burden and pattern of genital disorders in our setting. This study was undertaken to identify the prevalent trends and clinic-etiological profile of genital lesions.

Methods: 100 consecutive cases presenting with genital disorders to dermatology OPD of Sassoon General Hospital, Pune, India from June 2019 to March 2020, were enrolled in this observational, cross sectional study. Patients were subjected to thorough history, clinical examination and requisite microbiological and serological investigations. Etiological diagnosis was reached after correlation of history, clinical findings and investigations.

Results: 100 patients comprised 70 males and 30 females. Age group ranged from 2 months to 75 years (mean 37.8 years). Majority of patients belonged to 21-30 years age group. Total 78% patients had (STI) while 22% had non-STI. 13% were HIV sero-positive. 12% patients were diabetic. In 54% cases, microbiological findings confirmed the clinical diagnosis.

Conclusions: This study emphasizes that sexually transmitted infections continue to be a prominent cause of genital lesions, particularly in young sexually active individuals. However, various non-venereal dermatological disorders may manifest on the genitalia at any age, leading to diagnostic difficulty. A meticulous clinical examination supported by appropriate laboratory evaluation is the key to distinguish venereal and non-venereal dermatoses.

Keywords: Genital lesions, Sexually transmitted diseases, Non-STI

INTRODUCTION

Disorders affecting the genitalia are a global health problem of significant magnitude.¹ They comprise conditions, which may or may not be sexually transmitted. Various diseases affecting genitalia include- Infections: bacterial-such as syphilis, chancroid, Pelvic inflammatory disease, gonorrhea, LGV, bacterial vaginosis viral-herpes, warts, Molluscum, HIV, fungal-candidiasis, superficial dermatophytosis, infestations like scabies, pubic pediculosis, premalignant and malignant lesions, drug reactions like erythema multiforme, fixed

drug eruption, contact dermatitis etc. While different pathogens can cause the same syndrome, occasionally co-infection by more than one organism might occur. Many-a- times, it becomes impossible to make a reliable etiological diagnosis on clinical grounds alone. In a developing country like India, the burden of genital diseases is difficult to establish due to ethical problems, social stigma and lack of access to health care services. Despite the great impact on quality of life and reproductive health of affected individuals, this remains a neglected branch of medical science. As a result, treatment is often empirical and aimed at symptomatic

relief rather than an attempt to cure based on the identification of appropriate etiology.² Presently, there is a paucity of data about the burden and pattern of genital disorders in our setting. This study was undertaken to determine the current status of genital lesions and identify any change in trends.

METHODS

In this observational, cross-sectional study, 100 consecutive patients (irrespective of age or gender) with genital lesion were enrolled after institutional ethics committee approval and written informed consent. All patients were selected from dermatology out-patient department of Byramjee Jeebhoy medical college and Sassoon general hospital, Pune, Maharashtra, India, between June 2019 and March 2020.

A detailed history was elicited from all participants, followed by thorough clinical examination (local, complete dermatological and systemic). Routine laboratory investigations were done for all the patients and relevant microbiological, pathological and serological tests such as gram stain, Giemsa stain, wet mount, bacterial and fungal cultures, histopathological examination were performed on the samples as indicated (exudate/aspirated material/scraping/biopsy specimen collected from the lesion). Dark ground illumination microscopy (DGI) was performed for the demonstration of *Treponema pallidum*. Serum samples of all patients were screened for VDRL, HIV-ELISA and HBsAg. Etiological diagnosis was made after correlation of history, clinical findings and investigations, and the association between the etiology of the genital lesion and variables like age, gender and HIV status was determined

Statistical analysis

Data analysis was performed using Microsoft excel version 2019. Qualitative data variables were expressed as frequency and percentage.

Ethical considerations

The necessary permissions for human subject studies were obtained. Written Informed consent was received from all subjects and from the parents or legal guardian of minors. The project was approved by review board of B. J. government medical college, Pune, Maharashtra, India.

RESULTS

Total of 100 patients were enrolled in this study. Age ranged from 2 months to 75 years (mean age 37.8 years). Majority of patients belonged to age group of 21-30 years. One patient (2 months old) belonged to pediatric age group (<12 years). Three patients were adolescent (12-18 years) (Table 1).

Table 1: Demographic data of 100 patients with genital lesions.

Variables	Total	Male	Female
Total cases in study	100	70	30
Age (year)			
Children (<12)	1	1	0
12-20	7	5	2
21-30	34	24	10
31-40	19	14	5
41-50	20	12	8
51-60	11	9	2
61-70	7	4	3
71-80	1	1	0
STI	78	57	21
Non-STI	22	13	9
HIV	13	11	2
Diabetes mellitus	12	7	5

Out of 100 patients, 70 were male (70%) and 30 were female (30%) (Table 1). Mean age of male and female patients was 37.32 and 38.9 years respectively. Male to female ratio was 2.33:1

Out of 70 males, history of sexual exposure was present in 42 (60%). Out of 30 females, history of sexual exposure was present in 20 (66.66%).

Overall, 78% cases had STI and 22% cases had non-STI. Out of 78 cases of STI, 57 (73.08%) were male and 21 (26.92%) were female. Out of 22 non-STI cases, 13 (59.09%) and 9 (40.91%) were male and female respectively (Table 2).

Table 2: Etiology-wise distribution of STI cases.

STI	Total	Male	Female	Total (%)
Disease	78	57	21	100
Syphilis	7	7	0	8.97
Wart	12	6	6	15.38
Herpes	21	19	2	26.92
Carcinoma in situ	1	1	0	1.28
Condyloma acuminata	2	2	0	2.56
Condyloma lata	1	1	0	1.28
Chancroid	3	3	0	3.85
Bacterial vaginosis	5	0	5	7.80
Gonorrhoea	3	3	0	3.85
Candidial vulvovaginitis	6	0	6	7.69
Candidial balanoposthitis	8	8	0	10.26
Molluscum contagiosum	9	0	6	7.69

On analysis of overall data, it was noted that out of 100 patients, maximum presented with genital ulcer (33%) (7 syphilitic chancre, 21 herpes genitalis, 3 chancroid, 1 Behcet disease, 1 condyloma lata), followed by urethral or vaginal discharge (24%). 33 ulcerative STI cases constituted 26 (78.79%) males and 7 (21.21%) females. While 11 (45.83%) females and 13 (54.17%) males complained of discharge out of 24 cases, 29% patients in study group had recurring episodes of same lesions. Herpes genitalis presented with maximum number of recurrences.

Seven clinically diagnosed cases of syphilis were confirmed based on significant VDRL titres, while all three subjects with chancroid demonstrated pleomorphic gram-negative coccobacilli on smear examination. 16 smears out of 21 cases of herpes genitalis were confirmed by visualization of multinucleated giant cells on Tzanck smear. Three cases of gonorrhoea were confirmed by gram stain finding of polymer-penuclear leucocytes. Genital warts and molluscum contagiosum were diagnosed on the basis of characteristic clinical appearance. Out of 32 potassium hydroxide (KOH) smears, 12 showed branching filamentous fungi. Seven cases were confirmed on histopathological examination as Behcet disease (1), condyloma acuminata (2), carcinoma in situ (1), lymphangioma circumscriptum (1), condyloma lata (1) and irritant contact dermatitis (1) (Figure 3). Suture gaping in one patient was diagnosed based on suggestive history and after excluding all other causes (Table 4).

78 STI cases consisted of, herpes genitalis (21, 26.92%), genital warts (12, 15.38%), genital molluscum contagiosum (9, 11.54%), syphilitic chancre (7, 8.97%), candidial balanoposthitis (8, 10.26%), candidial vulvovaginitis (6, 7.69%), bacterial vaginosis (5, 7.80%), chancroid (3, 3.85%), gonorrhoea (3, 3.85%), condyloma acuminata (2, 2.56%), carcinoma in situ (1, 1.28%), condyloma lata (1, 1.28%) (Figure 1, Table 2).



Figure 1: Clinical presentation of STIs. (A) herpes genitalis, (B) genital molluscum contagiosum, (C) gonorrhoea, (D) condyloma acuminata, (E) syphilis, (F) genital wart.

Twenty-two Non-STI cases included, candidial balanoposthitis (4, 18.18%), vulvovaginal candidiasis (6, 27.27%), Behcet's disease (1, 4.55%), fixed drug eruption (1, 4.55%), irritant contact dermatitis (2, 9.09%), contact leucoderma (1, 4.55%), lymphangioma circumscriptum (1, 4.55%), psoriasis (1, 4.55%), tinea cruris 4 (11.11%), suture gaping (1, 4.55%) (Figure 2) (Table 3).

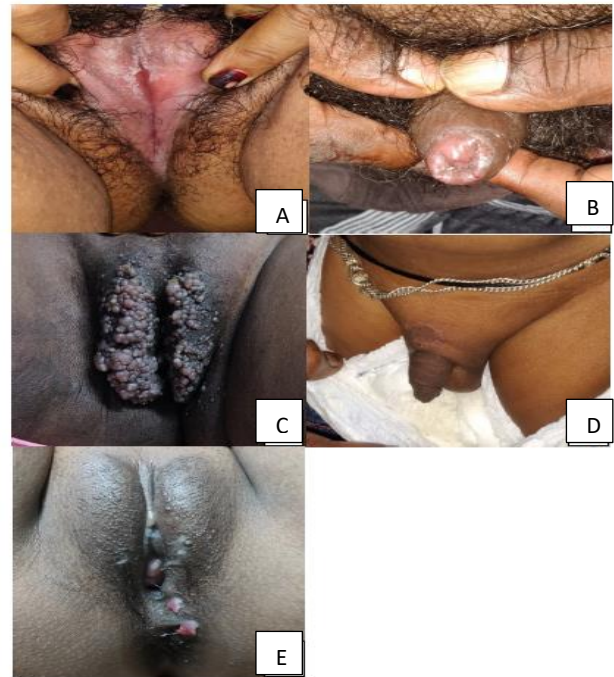


Figure 2: Clinical presentation of non-STI. (A) candidial vaginitis, (B) balanoposthitis, (C) lymphangioma circumscriptum, (D) tinea cruris, (E) episiotomy suture gaping.

Overall, most common STI was herpes genitalis, while non-STI was candidial balanoposthitis vulvovaginitis and tinea cruris. Herpes genitalis and genital warts were the predominant STIs among males and females respectively.

Out of 100 patients, 13 (13%) were HIV sero-positive, comprising 11 males and 2 females (Table 1). Out of 11 males, STI was seen in 10 patients while 1 patient had non-STI (candidial balanoposthitis). Most common STI was syphilitic chancre (4), followed by herpes (2), gonorrhoea (1), condyloma acuminata (2), molluscum contagiosum (1). CD4 count ranged between 100 and 684 (mean 440). Lowest CD4 count (100) was seen in one patient each of balanoposthitis and primary syphilis.

12 (12%, 5 females, 7 male) patients had diabetes mellitus. Of these seven were diagnosed with Diabetes mellitus when evaluated for the genital lesion (Table 1). Most common genital lesions in male and female diabetics were candidial balanoposthitis and vulvovaginitis respectively. Other than HIV and diabetes mellitus, no other co-morbidity was found.

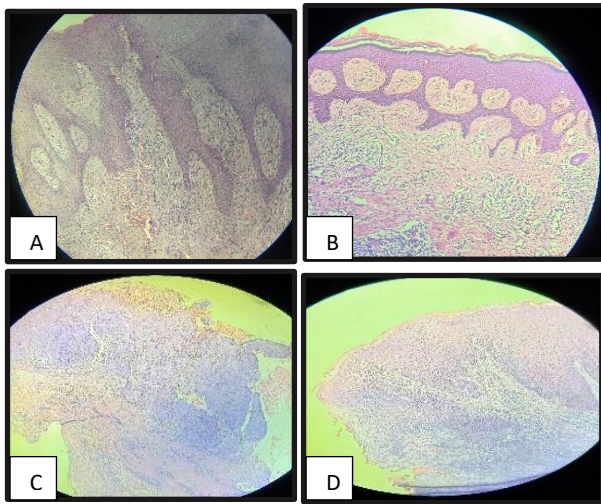


Figure 3: Histopathological findings in genital lesions; A) Condyloma lata-endarthritis obliterans and plasma cells, (B) lymphangioma circumscriptum-dilated channels lined by flattened endothelium, (C) condyloma acuminatum- acanthosis, parakeratosis, koilocytes, (D) carcinoma in situ- mitotic figures, parakeratosis, papillomatosis.

Table 3: Etiology-wise distribution of non-STI cases.

Non STI	Total	Male	Female	Total (%)
Disease	22	13	09	100
Candidial Balanoposthitis	4	4	0	18.18
Behcet disease	1	0	1	4.55
Fixed drug eruption	1	1	0	4.55
Irritant contact dermatitis	2	2	0	9.09
Contact leucoderma	1	1	0	4.55
Lymphangioma circumscriptum	1	0	1	4.55
Psoriasis	1	1	0	4.55
Tinea cruris	4	4	0	18.18
Suture gaping	1	0	1	4.55
Vulvovaginal candidiasis	6	0	6	27.27

Table 4: Investigations performed in 100 patients with genital lesions.

Clinical diagnosis	Total cases	VDRL reactive	Gram stain positivity rate (%)	Giemsa stain positivity rate (%)	KOH positivity rate (%)	Biopsy (Clinico-pathologic correlation)
Syphilis	7	7	-	-	-	-
Warts	12	-	-	-	-	-
Herpes genitalis	21	-	-	76	-	-
Behcet disease	1	-	-	-	-	1
Carcinoma in situ	1	-	-	-	-	1
Vulvovaginal candidiasis	12	-	-	-	50	-
Bacterial vaginosis	5	-	100	-	-	-
Condyloma accuminata	2	-	-	-	--	2
Condyloma Lata	1	-	-	-	-	1
Chancroid	3	-	100	-	-	-
Gonorrhoea	3	-	100	-	-	-
Fixed drug eruption	1	-	-	-	-	-
Irritant contact dermatitis	2	-	-	-	-	2
Leucoderma	1	-	-	-	-	-
Lymphangioma circumscriptum	1	-	-	-	-	1
Psoriasis	1	-	-	-	-	-
Molluscum contagiosum	9	-	-	-	-	-
Balanoposthitis	12	-	-	-	50	-
Tinea cruris	4	-	-	-	50	-

DISCUSSION

In our study, more than half the participants presented with STIs, a finding which indicates that STIs remain a predominant cause of genital lesions. The pattern of sexually transmitted diseases differs from country to country and from region to region, especially in large countries like India. We found that STIs were significantly more common in males (73.08%), than in females (26.92%). It is unclear whether this is attributable to a true higher prevalence among males because of their greater indulgence in high-risk behavior. On the other hand, it is likely that females may not approach the health care system due to the embarrassment and social stigma associated with genital disorders.

34% of our study group belonged to the age of 21-30 years, a sexually active age group, which is relatively less as compared to study of Mehta et al (29, 58%).³ According to Mehta et al study, sexual exposure was positive in 68% male and 4% female, while in our study it was 60% and 20% in males and females respectively.³

Mishra et al. in their study of profile of patients attending STD clinic in a hospital in Gwalior, India, found that vaginal discharge was a common complaint in all their female patients while 16.6% presented with ulcer. Genital ulcer (80%) the most common presenting complaint in males.⁴ Al-Mitairi et al found in their study that most common presenting symptom was urethral discharge (54.1%), followed by genital ulcer (17.8%).⁵ Mitra et al in their study reported genital ulcer as the most common presenting complaint among males (33.33%), followed by urethral discharge (26.99%).⁶ Most common presenting complaint in entire study group as well as men was genital ulcer, which is consistent with study of Mitra et al. In females' participants also most, common presenting complaint was genital ulcer. It shows that, in this era number of females approaching health care system for genital lesion has increased.

Thappa et al in their study on the prevalence of sexually transmitted infections in Cuttack, India noted that herpes genitalis (21.89%) and syphilis (16.27%) were the two most common sexually transmitted diseases while molluscum contagiosum (2.14%) was the least common.⁷ Arora Chetna et al in their study found that among the males, herpes genitalis (31.8%) followed by venereal warts (30.1%), gonorrhoea (10.7%) and syphilis (9.7%) were the four most common diseases.⁸ Among females, pelvic inflammatory disease with or without secondary syphilis (32.2%), trichomoniasis (17%) and herpes genitalis (15.3%) were the commonest. In the present study, the most commonly encountered STI was herpes genitalis (35.59%) followed by wart (20.34%) and molluscum contagiosum (15.25%), while the least common was condyloma lata (1.69%), a manifestation of secondary syphilis. These observations were consistent with the findings of Thappa and Chetna et al. The higher

prevalence of herpes genitalis in the present study reflects the changing trends in the pattern of STIs in our country. This is probably due to syndromic management of STIs at primary health care centers, wherein according to NACO guidelines all STIs are treated based on symptoms and signs and the likely causative organisms rather than specific etiology.

Saraswat et al in their study on male patients have documented that the most common non-venereal genital dermatoses were vitiligo (18%), pearly penile papules (16%), Fixed drug eruption (12%), scabies (10%) and scrotal dermatitis (9%).⁹ Sivayadevi et al found that the most common non-venereal genital dermatosis was vulvovaginal candidiasis (39%) among the females enrolled in their study; the other dermatoses recorded include lichen sclerosus et atrophicus, lichen simplex chronicus and lymphangioma circumscriptum. In our study, most common cause of non-venereal genital dermatosis was candidial balanoposthitis and vulvovaginitis in males and females respectively. These findings are consistent with Sivayadevi et al. study.¹⁰ The other dermatoses encountered in our study were Behcet's disease, contact leukoderma, psoriasis, tinea cruris, irritant contact dermatitis (ICD) and fixed drug eruption (FDE). Candidial infections can be acquired by sexual or non-sexual route. In our study, depending on active sexual history, we have classified candidial balanoposthitis and vulvovaginitis into STI and non-STI category.

We found HIV sero-positivity among 13% of our 100 subjects, out of which majority (10 patients) were associated with STI. Syphilis was the most common STI associated with HIV sero-positive subjects followed by herpes genitalis. Kumar et al study shows a similar prevalence of patient's HIV-sero-positive individuals. There is a strong association between sexually transmitted genital lesions and HIV infection.¹¹ STIs and HIV are linked by biological interactions and because both infections occur in the same populations. Infection with certain STIs (ulcerative, particularly herpes genitalis) can increase the risk of acquiring and transmitting HIV as well as alter the way the disease progresses. Significant association was found between CD4 count and genital wart, genital herpes and vaginal discharge syndrome by Chandrakala et al.¹² This study reported that, maximum infectious and non-infectious dermatoses belong to CD4 category 50-200, and 200-500 respectively. In our study CD4 count was in the similar range. These dermatoses indicate worsening of immune status and need for regular monitoring with periodical CD4 count assessment.

Acquired balanoposthitis can be the first clinical sign of Diabetes mellitus in uncircumcised males. The diagnosis of DM was made for the first time in 8% of their patients by Verma and Celia et al found positive association between vulvovaginal candidiasis and diabetes mellitus.^{13,14} In our study, none of the males were

circumcised. Seven out of 12 diabetics had previously undetected diabetes and were diagnosed during evaluation for genital lesions. This reinforces that candidial balanoposthitis and vulvovaginitis is a marker of DM in an otherwise healthy person.

76% cases of herpes genitalis were confirmed by Giemsa stain (Tzanck smear) which is higher than that reported by Kumar et al (53.8%).¹⁵

We encountered a 2-month-old infant with tinea cruris on scrotum, which was confirmed by KOH mount. Family history revealed that both parents had extensive dermatophytosis which evidently, had been transmitted to the child through close physical contact and fomites.

An elderly male presented with a progressively increasing verrucous plaque on coronal sulcus, with erythema and micaceous scales on glans of 6 months duration. Clinically diagnosed as condyloma acuminata histopathology showed mitotic figures in basal layer with high N:C ratio, along with features of condyloma leading to the final diagnosis of carcinoma in situ arising from condyloma acuminata. Hence it was included in the STI group as the primary lesion was an STI which had undergone malignant transformation.

An elderly female presented with multiple grouped umbilicated papules and vesicles on labia majora for one year. Clinical differentials of molluscum contagiosum and adnexal tumour were considered, but biopsy confirmed the diagnosis of lymphangioma circumscriptum.

A female patient on postpartum day 15 presented with a painful lesion on perineal area. She had a normal vaginal delivery with a history of infected episiotomy wound. Clinically there were two linearly aligned erythematous reducible plaques. All investigations for STI were negative, and the lesion was diagnosed as suture gaping (episiotomy wound dehiscence) and referred to Gynecology for further management. This underlines the utility of history and palpation in providing important diagnostic clues

Two patients in our study were diagnosed with irritant contact dermatitis (ICD), due to application of salicylic acid, boric acid and camphor containing Over-the-counter (OTC) topical preparations for tinea cruris (groin and scrotum) and tinea corporis.

One patient of fixed drug eruption was encountered with recurrent history of appearance of hyperpigmented macule on glans after ingestion of Tab norfloxacin.

One patient presented with depigmentation on glans, without evidence of similar lesions elsewhere on body. Interrogation disclosed some application preceding the pigmentary change. Diagnosis of contact/chemical leukoderma was made after ruling out all other causes.

Behcet's disease was confirmed histopathologically in a female, presenting with recurrent recalcitrant ulcers on labia since few years, with all investigations negative for STIs. She had no other abnormality at the time.

Limitations

This study is novel, being a comprehensive clinico-etiological compilation of all genital lesions (both venereal and non-venereal) encountered in a tertiary care center. Most previous studies were restricted to either of the two groups and hence despite thorough search through literature we were unable to find a similar study to compare our findings. The limitation was that due to the small number of cases in individual etiological groups, statistical analysis could not be done to validate the association between various parameters. Thus, the present study has probably thrown light upon the mere "tip of the iceberg" and paved the way for further research in this important field involving a more robust sample size.

CONCLUSION

This study emphasizes that sexually transmitted infections continue to be a prominent cause of genital lesions, particularly in young sexually active individuals. Hence, measures for their prevention and control need to be intensified in this target population. However, various non-venereal dermatological disorders may manifest on the genitalia at any age, the presentation might sometimes differ from their typical appearance on non-genital sites leading to diagnostic difficulty. A meticulous clinical examination supported by detailed history and appropriate laboratory evaluation is the key to distinguish venereal and non-venereal dermatoses. Screening for HIV with periodic CD4 monitoring is mandatory in patients presenting with venereal genital lesions while candidiasis is a cutaneous marker for diabetes mellitus.

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