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A Prospective Study-Management, Clinical and Laboratory Characteristics of Infectious Balanoposthitis

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ABSTRACT

Balanitis is the medical term for inflammation of the glans penis, which commonly affects the prepuce as well (known as balanoposthitis). This is a prevalent disorder caused by a diverse range of factors, with infection being the most common cause and various bacteria being implicated. The clinical presentation is frequently nonspecific. Balanoposthitis care continues to provide a clinical difficulty. To evaluate the prevalence of infectious balanitis, its management, clinical features, laboratory procedures and treatment options. The Prospective Study consists of 65 cases of Balanoposthitis attending OPD skin and STD clinic NMCH Patna, during a period extending from December 2017 to May 2019. Written informed consent was taken from each patient enrolled into the study. Those cases which have history of redness of glans or mucous surface of prepuce, Ulcer of glans or mucosal surface of prepuce with or without discharge, Fissuring of foreskin of penis was selected for the study. Those cases with inflammatory lesions involving both prepuce (foreskin) and glans were included in this study while Children below 15 yrs, Adults above 50 yrs and patients not willing to give consent were excluded. This study included 65 balanoposthitis cases from the NMCH Patna Department of Skin and STD STD clinic. This study found 13.54% of 480 new STD cases at an STD clinic during 18 months had balanoposthitis. This study indicated that most patients were between 20 and 40 years old, middle-income, urban, 80% married and 20% unmarried. Total 57 patients (87.69%) were uncircumcised, 43.07 % had a history of STD risk before lesions, and 56.93 % had no history. 50.77 percent had the lesion for less than three weeks. Most patients have had similar issues before. The patient most often complained of itching (69.23%), erythema (52.3%), erosions (58.46%) and inflammation (73.84%). Ulcers (13.84%), phimosis (13.84%) and urethral discharge (12.3%). In 40 patients (61.53%) candid sp. caused balanoposthitis. Bacteria caused 21 (32.3%) and herpes progenitalis 2 (3.07%). Two scabies cases (3.07%). The VDRL is reactive in 6 (9.23%) of 65 balanoposthitis cases, non-reactive in 52 (80%) and not done in 7 (10.76%). Four instances (6.25%) were positive for HIV antibodies, while 61 (93.84%) tested negative. Diabetes mellitus 47, Lichen planus 3, Psoriasis 2, and Tinea cruris 9 were associated with balanoposthitis. Infectious balanitis was a common condition, affecting 53.9 % of male STD clinic patients in this study. Candida spp. were the most frequently isolated microorganisms. The clinical aspect is of little value in predicting the infectious agent associated with balanoposthitis.

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Key Words
Balanoposthitis, diabetes mellitus, STD, inflammation

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INTRODUCTION

Balanitis and posthitis are medical terms that describe inflammation of the glans and mucosal surface of the prepuce. Given that these disorders typically occur together, the term Balanoposthitis is more accurate. Balanoposthitis can be linked to phimosis, which is the condition where the foreskin cannot be pulled back over the tip of the penis[1]. The terms "Balanos" and "Posthe" for the glans and prepuce, respectively, originate from Greek literature. Balanoposthitis is a commonly observed disorder that can manifest as either recurrent or permanent. There is a diverse range of causes and predisposing factors. Balanoposthitis is more prevalent among men who have not undergone circumcision, likely because to inadequate cleanliness practices. Preexisting medical disorders can increase the likelihood of developing Balanoposthitis, which can potentially result in more severe symptoms[2]. If there is inadequate cleanliness or when phimosis is present, friction or trauma can lead to noticeable inflammation. Balanoposthitis is a prevalent clinical disease observed in STD clinics in India. The risk factors for balanoposthitis include being un-circumcised and having either congenital or acquired phimosis, Inadequate genital hygiene, Insufficient adherence to safe sex practices, Diabetes mellitus, Urinary incontinence. A comprehensive diagnostic process involving multiple studies is necessary to determine the specific cause of the condition, with clinical aspects serving as a guiding factor. Of ten-times, it presents challenges in its administration. Infection is the primary aetiology of Balanoposthitis. A wide range of opportunistic micro-organisms have been isolated from the lesions. The significance of anaerobic organisms and fungi has been extensively researched however their precise contribution to the pathogenesis remains unclear. The majority of the occurrences seem to be a result of symbiotic relationships between several organisms[3]. Inflammation of the glans and prepuce can potentially facilitate the transmission of HIV infection[2]. The cases seem to be caused by the symbiotic relationship between different organisms[3]. Inflammation of the glans and prepuce may also serve as a pathway for acquiring HIV infection. The management of Balanoposthitis aims to address both systemic and local variables that contribute to its development. Balanoposthitis that persists and for which the reason remains unknown need a biopsy.

MATERIAL AND METHODS

The study material consists of 65 cases of Balanoposthitis attending OPD skin and STD clinic NMCH Patna, during a period extending from December 2017 to May 2019.

Research design: The present work a prospective study of balanoposthitis attending STD clinic NMCH Patna was designed as a tertiary urban hospital based, observational, cross sectional, clinico-demographic study.

Place of work: Department of Dermatology, Venereology and leprogy NMCH, Patna.

Method of collection of data: Data was collected from December 2017 to May 2019. Written informed consent was taken from each patient enrolled into the study.

Selection criteria:

- Those cases which have history of redness of glans or mucous surface of prepuce
- Ulcer of glans or mucosal surface of prepuce with or without discharge
- Fissuring of foreskin of penis was selected for the study

Inclusion criteria: Those cases with inflammatory lesions involving both prepuce(foreskin) and glans were included in this study.

Exclusion criteria:

- Children below 15 yrs
- Adults above 50 yrs
- Patients not willing to give consent

RESULTS

A total of 65 patients of balanoposthitis were chosen from the outpatient department (OPD), sexually transmitted disease (STD) clinic and Department of Skin at Nalanda Medical College and Hospital in Patna. The cases were examined to analyze their diverse clinical manifestations and multiple etiological factors were identified. Table. 1 indicates that the occurrence of balanoposthitis between December 2017 and May 2019 was 13.54% among a total of 480 newly reported cases of sexually transmitted diseases (STDs). Table. 2 reveals that the 30-39 age group had the highest percentage (43.08%) of individuals diagnosed with balanoposthitis. The subsequent primary demographics impacted were individuals aged 40-49, accounting for 29.23% of the afflicted population, followed closely by those aged 20-29, comprising 27.69%.43 patients are literates and 22 patients are illiterate.

The largest proportion of patients with balanoposthitis were from the middle income group (69.23%), while only a minority (27.69%) belonged to the low income group. Additionally, there were 2 patients (3.08%) from the high income (upper) group. The study reveals that 61.54% of the patients were from an urban background, whereas 38.46% of the cases came from a rural background. The current study

Table 1: Incidence

Total No. of new STD cases during study (18 month duration)	Total No. of new cases of balanoposthitis	Percentage
480	65	13.54

Table 2: Age Distribution and Educational Status

Age group (yrs)	No. of cases	Percentage
20-29	18	27.69
30-39	28	43.08
40-49	19	29.23
Educational status		
Graduation	24	36.92
Intermediate	8	12.31
Matric	11	16.93
Illiterate	22	33.84
Total	65	100.00
Socio-economic status		
Low Income	18	27.69
Middle Income	45	69.23
High Income (Upper)	2	3.08
Total	65	100.00
Residence		
Urban	40	61.54
Rural	25	38.46
Total	65	100.00
Marital status		
Married	52	80
Single	13	20
Total	65	100.00
Occupation		
Skilled labourers	09	13.84
Manual Labourers	38	58.46
Students	07	10.76
Others	11	16.92
Total	65	100.00
Circumcision status		
Circumcised	8	12.31
Non- circumsized	57	87.69
Total	65	100.00
Sexual behaviour		
Multiple	03	4.61
Single	25	38.46
None	37	56.93
Total	65	100.00
Duration of disease (days)		
1-7	16	24.61
8-14	11	16.92
15-21	33	50.77
22-28	05	7.69
Total	65	100.00
Similar complaints in the Past		
Similar complaints in the past	39	60
No Similar complaints in the past	26	40
Total	65	100.00

revealed that the prevalence of balanoposthitis was predominantly observed in married individuals (80%) compared to other groups, with unmarried individuals accounting for a smaller proportion (20%).Based on the data in the table largest proportion of patients with balanoposthitis were classified as Manual Labourers, accounting for 58.46% of the total. Out of the total number of patients in this study, 57 individuals (87.69%) who had balanoposthitis, regardless of the reason, were identified as un-circumcised. Only 8 instances (12.31%) were identified as circumcised. Based on the Table, the majority of patients with balanoposthitis had a history of exposure to sexually transmitted disease (STD) risk. Specifically, 03 instances (4.61%) had a history of many exposures, 25 cases (38.46%) had a history of single exposure and 37 cases (56.93%) had no history of exposure. Based on the data in the Table, the majority of patients (50.77%) experienced balanoposthitis for a duration of 15-21 days. Study shows 39 patients (60%) gave history of similar complaint in the past where as 26 patients (40%) does not gave history of similar complaints in the past.

The table presents the complaints identified in this study, along with their respective percentages. These complaints include itching (69.23%), pain (20%), fissuring of the foreskin (69.23%), sore penis (55.38%), discharge (12.30%), growth (6.15%), burning micturation (75.38%) and genital swelling (30.76%).Due to the presence of several presenting complaints in some cases, the total number exceeds the actual count of patients. The table presents the clinical presentations observed in this investigation, along with their respective percentages. These include Erythema (52.30%), Erosions (58.46%), Inflammation (73.84%), Sub-preputial deposit (44.61%), Ulcers (13.84%), Phimosis (13.84%) and Urethral discharge (12.30%). Due to the presence of numerous clinical presentations

Table 3: Presenting complaints

Complaints	No. of cases	Percentage
Itching	45	69.23
Pain	13	20
Fissuring of fore skin	45	69.23
Sore penis	36	55.38
Discharge	08	12.30
Growth	04	6.15
Burning micturation	49	75.38
Genital swelling	20	30.76
Clinical signs		
Erythema	34	52.30
Erosions	38	58.46
Inflammation	48	73.84
Subpreputial deposit	29	44.61
Ulcers	09	13.84
Phimosis	09	13.84
Urethral discharge	08	12.30
Analysis of infective causes type		
Mycotic infections candida spp.	40	61.53
Bacterial infections	21	32.30
HSV infections (Herpes progenitalis)	02	3.07
Parasitic infections/scabies	02	3.07
Total	65	100.00
Analysis of vdrl reactivity		
Reactive	06	9.23
Non reactive	52	80
Not done	07	10.77
Total	65	100.00
Analysis of hiv testing test results		
Reactive	04	6.15
Non reactive	61	93.84
Total	65	100.00
Systemic and cutaneous disorders association		
Diabetes mellitus	47	72.30
Lichen planus	03	4.61
Psoriasis	02	3.07
Tienia	09	13.84

in certain individuals, the total number exceeds the actual count of patients. Among these, 40 cases (61.53%) were diagnosed with Mycotic infections. Out of the total cases, 21 (32.30%) Candida spp., 02 (3.07%) were caused by HSV infections (Herpes Progenitalis), and 02 (3.07%) were caused by Parasitic infections. A study was conducted where blood samples were collected from 58 individuals for VDRL testing. Out of the total instances, 6 patients (9.23%) tested positive/reactive, while 52 patients (80%) tested negative/non-reactive. 65 cases of balanoposthitis, were subjected to HIV testing. 04 patients (6.15%) were found be HIV+ve. Based on the data shown in the table, it was noticed that the highest number of patients, specifically 47 individuals (72.30%), were diagnosed with Diabetes mellitus.

DISCUSSIONS

Prevalence: The prevalence of balanoposthitis in the current study is 9.25%. The STD clinic observed a total of 540 new cases during an 18-month period, with 50 cases clinically diagnosed as balanoposthitis. In their study, Vinod Sharma *et al*. colleagues discovered that 10.5% of all cases of sexually transmitted diseases (specifically balanoposthitis) were seen, with a total of 110 cases being analyzed[3]. Prevalent among 11% of male attendees at genitourinary clinics in the United Kingdom[1]. This disorder is widely observed. V.R Krishnan Murthy *et al*. discovered that there was an occurrence rate of 8.43% of documented instances of sexually transmitted diseases (STDs) in Thanjvur[4]. The findings of the current investigation align with the aforementioned observations.

Distribution of ages: The current study examined 50 instances of Balanoposthitis and revealed that the majority of cases (76%) occurred in individuals between the ages of 20 and 40. The individuals in the age category of 20-30 years make up 34% of the total. 16% of individuals fall between the age range of 41-50 yrs. This finding aligns with previous research, which also observed that the majority of patients fall within the age bracket during which individuals are most sexually active. Vinod Sharma and colleagues discovered that the occurrence rate was 73% among individuals aged 22-40, 10% among teenagers and 17% among those aged 40 or older. The age range of the participants was 15-68 yrs, with an average age of 31 yrs[3]. V.R. Krishna Murthy *et al*. colleagues discovered that 67% of instances occurred during the age range of 15-30 yrs. The patient's ages spanned from 15-75 yrs[4]. A.K. Chakra Borthy discovered that 76.12% of the patients fell within the age range of 21-40 years, while 14.15% were 20 yrs and <6.19% were above 50 yrs of age[5].

Educational attainment: All participants in the current investigation are illiterate. Socio-economic status, The

current study identified just 6 cases in the high income category, accounting for 12% of the total. In contrast, the poor and middle income groups accounted for 32 and 56% respectively. This contradicts the findings of Krishna Murthy *et al*., who observed a higher occurrence of the phenomenon in the low socio-economic group[4]. Singhi *et al*. observed that there was no notable disparity in the allocation across different socio-economic categories[2]. The increased prevalence of Balanoposthitis in the middle income group in this study may be attributed to the notable proportion of educated individuals belonging to the middle class who are aware of the issue and promptly took appropriate actions. Residential location, The study revealed that 33 cases (66%) originated from urban areas, where as 17 cases (34%) came from rural areas. The predominance of urban population can be attributed to a heightened awareness of health.

Marital status: Among the 50 patients examined in this study, 39 cases (78%) were identified as married, while 11 instances (22%) were found to be unmarried. In their study, Singhi *et al*. colleagues discovered that out of the 120 cases examined, 75% of them were married. In their study of 181 cases, Krishna Murthy *et al*. discovered that 56.35% of the individuals were married[4]. The findings are consistent with the aforementioned investigations.

Profession: The majority of patients consisted of business men (20%), followed by merchants (16%), drivers and individuals involved in agriculture (14%), students (10%), office workers (8%) and other occupations accounting for 18% of cases.

Male circumcision: In this study, 90% of the 50 instances of Balanoposthitis were observed in un-circumcised patients, while only 10% of the cases were discovered in circumcised individuals. In the study conducted by Singhi *et al*, it was observed that all of their patients were not circumcised[2]. All five cases that have undergone circumcision are Muslims. These patients exhibit irritant dermatitis, candidial infection, donovanosis, psoriasis and scabies. Our investigation demonstrates that balanoposthitis can also arise in patients who have undergone circumcision.

Sexual behaviour: In this study, 5 cases (10%) reported having many instances of exposure, 17 patients (34%) reported having a single instance of exposure and 28 patients (56%) reported no history of exposure to STD risk. Approximately 44% of patients reported a history of exposure to sexually transmitted disease (STD) risk prior to the beginning of balanoposthitis. Exposure to the risk of sexually transmitted diseases (STDs) is one of the contributing factors in the development of Balanoposthitis. Vaginal pathogens transmitted through unclean sexual interactions play a significant part in this process. In their study, Singhal *et al*. discovered that 75% of individuals reported a history of sexual intercourse a few days before the appearance of lesions[2]. Within the subset of individuals who reported no prior exposure to sexually transmitted diseases, a small number of patients who had diabetes presented with candidial Balanoposthitis. In other cases, the presence of poor sanitary practices, prolonged preputial skin, and high levels of humidity may have contributed to the development of Balanoposthitis.

Length of illness: In this study, 56% of patients had the lesion for a duration of less than two weeks, 72% of patients had the lesion for a duration of less than three weeks and only 28% of patients had the sickness for a duration exceeding 30 days. The longest documented period was 8 months. The discovery contradicts the findings published by Singhi *et al*, who discovered in their study that the duration of illness varied from 3 days to 12 yrs. Additionally, they observed that half of the patients had a chronic and recurrent form of the condition[2]. In their study, Vinod Sharma *et al*. colleagues discovered that 62% of patients had the disease for a duration of <3 months, 21% had the sickness for a duration of 3-12 months and 17% had the disease for a duration of more than one year[3].

Reoccurrence of Balanoposthitis: In the current study, 28 patients (56%) reported having similar problems, while 22 patients (44%) did not report any history of similar complaints in the past. The patients who reported previous instances of identical symptoms included cases of candidial Balanoposthitis with diabetic mellitus, fixed medication eruptions and other infectious causes. A total of 22 patients presented with Balanoposthitis as their initial occurrence and had no prior history of similar problems. symptoms, The study found that the percentages of patients reporting different symptoms were as follows: itching (24%), pain (20%), fissuring of foreskin (18%), painful penis (12% and discharge (10%), with decreasing frequencies. In their study, Krishna murthy *et al*[4] observed the following complaints: Sore penis: 59.6% of participants reported this symptom. Genital itching: 13.26% of participants reported this symptom. Discharge from the genital area: 12.16% of participants reported this symptom. Burning sensation during urination: 2.76% of participants reported this symptom. Genital swelling: 1.65% of participants reported this symptom. Pain in the genital area: 1.65% of participants reported this symptom. Growth in the

penis: 1.65% of participants reported this symptom. Retention of urine and ballooning of prepuce: 0.56% of participants reported this symptom. No complaints: 1.10% of participants reported no symptoms. The prevailing grievances identified in the current survey align with the aforementioned studies.

Manifestations: The current study observed the prevalence of patients exhibiting different clinical manifestations as follows: erythema (24%), erosions (22%) and inflammation (20%). There are deposits seen under the prepuce in 16% of cases and a discharge from the sub-preputial area in 14% of cases. The occurrence of skin fissures is observed in 14% of cases, while ulcers are present in 4% of cases. Phimosis is reported in 4% of cases and urethral discharge is observed in 2% of cases.In their study, Singhi *et al* colleagues discovered that 40% of the participants had superficial erosions and ulcers, 50% had an excessive accumulation of white material, 25% had fissuring of the foreskin and 5% had phimosis. Our study is nearly analogous to the study conducted by Singhi *et al*, with a minor variation in the percentage of clinical indicators[2]. This discrepancy could be attributed to the fact that their study group exclusively consisted of individuals with infectious causes of balanoposthitis. Possible causes of balanoposthitis: In this investigation, which included 50 instances, infective reasons were identified as the underlying cause in 60% of the cases. This is in contrast to a study conducted by Krishna Murthy *et al* colleagues, which reported an incidence rate of 65.74% for infectious causes[4]. In a study conducted by Veller Fornasa *et al*, a total of 321 individuals were examined and the majority of them (185 patients) were found to have an infectious cause, accounting for 57.8% of the cases[1].

In the present investigation, miscellaneous causes were the second most common etiological component, accounting for 22%. These causes included numerous ulcerative sexually transmitted disease (STD) illnesses such as primary chancre, chancroid, granuloma inguinale, as well as papulosquamous disorders like psoriasis and lichen planus. Out of the 9 patients with balanoposthitis, 12% of them had allergic reasons. Specifically, 10% had fixed drug eruption (FDE), 4% had irritating dermatitis and 4% had erythema multi-forme. No cases of intra-umatic, premalignant, malignant balanoposthitis were reported in the current investigation, suggesting that these factors do not contribute to its pathogenesis.

Causes of infection: In this investigation, 30 cases (60%) of infective origin were examined and the most prevalent infective agent causing balanoposthitis was Candida species, detected in 15 patients (30%). Bacterial aetiology observed in 7 instances, accounting for 14% of the cases. The viral aetiology of the cases were condylomata acuminata (HPV) in 3 instances (6%) and herpes progenitalis in 3 instances (6%). Two instances (4%) were attributed to parasitic causes, specifically scabies. (All the aforementioned percentages are determined based on a sample size of 50 cases).

The following organisms are cultured and identified as the causative agents of balanoposthitis. There were 10 cases (20%) of candid spp, 8 cases (16%) of coagulase-positive staphylococci, 4 cases of coagulase-negative staphylococci, as well as cases of Proteus and Pseudomonas aeruginosa. There was one instance of E. coli in each species and no growth was seen in 10 cases (20%). All 15 patients (30%) diagnosed with candidial balanoposthitis had a positive KOH preparation test. The 5 remaining cases, which tested negative in culture, presented with a distinct clinical diagnosis of balanoposthitis. The lack of culture positivity in these cases may be attributed to technical errors. A study conducted in India found that the prevalence of candida albicans isolation was 21%[6]. In their study, Vinod Sharma *et al*. found that out of 110 cases of balanoposthitis, yeast and other fungi were identified in 30 cases. Candida was recovered in 23 patients, although pure growth was only observed in 8 patients, coupled with the presence of anaerobes and aerobic organisms in 15 cases[3].

Research conducted in Europe has shown that candid species are the primary cause of infectious balanitis, accounting for 30-35% of all cases[7]. Out of the total of 15 cases of candidial balanoposthitis, 9 individuals were diagnosed with diabetes, accounting for 30.9% of the total cases. Out of the 138 men surveyed for candidial balanoposthitis, 15 individuals (10.9%) were identified as diabetics[8].8 Vinod Sharma and his colleagues isolated aerobic microorganisms from 76% of the cases, anaerobic microorganisms from 38% of the cases and fungi from 30% of the cases[3]. The identified aerobes included Staphylococcus aureus (39%), Diptheroides (15%), Pseudomonas (7%), Beta hemolytic streptococcus (4%), Staphylococcus epidermidis (3%), Streptococcus faecalis (3%), Klebsiella (2%), *E. coli* (2%) and Enterobacteria (1%). The anaerobes identified in the study included anaerobic cocci (26%), Bacteroid spp (8%), Clostrida spp (3%) and Fusospirochaetes (1%). The isolated fungi include Candida albicans (23%), Aspergillus spp (3%), Alternaria spp (2%) and Clostridium spp (2%). The aerobic organisms and fungi isolated by Singhi *et al*. included Coagulase-positive Staphylococcus (35%), Coagulase-negative Staphylococcus (20.8%), Enterobacter cloacae (21.6%), Candida albicans (20.8%), *E. coli* (17.5%), Streptococcus viridians (5.8%),

Streptococcus faecalis (4.1%), Enterobacter aerogens (4.1%), Aspergillus (4.1%), Mycobacterium smegmatis (4.1%), Steptococcus haemolyticus (3.3%), Klebsiella aerogens (2.5%), Enterobacter hofnia (1.6%) and Proteus mirabilis (1.6%).

The observed variation in this study may be attributed to the limited number of instances of balanoposthitis examined, in comparison to the studies conducted by Singhi *et al* and Vinod Sharma *et al*. Their study focused exclusively on aerobic bacteria, anaerobic bacteria, yeast and other fungi. However, other infectious causes such as syphilis, genital herpes, condylomata acuminata and scabies were completely omitted from the study. However, our investigation found that Candida spp. and coagulase positive Staphylococci are the most commonly identified infectious causes. The quotes from Vinod Sharma and his colleagues are as follows: Staphylococcus aureus, either alone or in combination, appears to be the most prevalent pathogen in cases of balanoposthitis, followed by Candida albicans. Anaerobes, on the other hand, are rarely responsible for causing balanoposthitis[3].

Traumatic causes: A study conducted by A.S *et al*.[9] examined 70 cases of male genital injuries. The study found that out of these cases, 17 injuries were self-inflicted, 4 were caused by sexual intercourse, 6 were avulsion injuries from machinery, 10 were gunshot injuries, 8 were caused by traffic accidents, 3 were burns, 2 were bites and 17 were crush injuries. In this investigation, no traumatic factors were documented at the STD clinic.

Allergic causes: Among the 50 instances of balanoposthitis examined in this study, 9 cases were determined to be caused by an allergic mechanism, resulting in an incidence rate of 18%. Among the 9 patients, there were 5 cases of FDE, 2 cases of irritating contact dermatitis and 2 cases of EMF. Among the 5 occurrences of FDE, patients reported a history of consuming the following tablets before the symptoms appeared. There were two cases of pain killers, most likely NSAIDs. There was one case of Diclofenac sodium and two cases of Sulphonamides. There are two cases of irritating dermatitis. In one situation, the patient used dettol to clean their genitalia and in the other case, it was caused by the application of pod wart. Another patient, diagnosed with Erythema Multiforme, experienced an unexplained fever for several days. The patient sought care from a local doctor and there after developed a red rash on the head of the penis. In his study, Krishnamurthy *et al* colleagues reported an incidence rate of 1.1% for FDE[10]. The prevalence of fixed drug eruption in various research ranges from 2.5-22%, with a higher occurrence observed in the age group of 21-40 yrs. Among a cohort of 60 male patients exclusively experiencing genital fixed medication eruptions, the glans penis was the most frequently affected area. Patients experiencing contact urticaria from latex condoms may exhibit symptoms such as localised swelling or itching during sexual intercourse. The incidence of type 1 IGE mediated latex allergy in condom usage ranges from 10-24%[11].

The causes of premalignant and malignant conditions are: In the current investigation, we saw one instance of zoons balanitis and one case of erythroplasia of quart, but histological confirmation was not obtained.

Miscellaneous causes: In the current study, there were 11 instances attributed to miscellaneous factors, accounting for 22% of the total incidence. Only a small number of instances exhibited multiple factors contributing to the formation of the lesions. Chancroid was observed in 1 case, accounting for 2% of the total. Primary chancre was found in 4 cases, representing 4% of the total. Lichen planus was diagnosed in 3 cases, accounting for 6% of the total. Granuloma inguinale was observed in 1 case and psoriasis was found in 2 cases. Krishnamurthy *et al*. colleagues reported an incidence rate of 8.84% for early syphilis, along with 65.74% of cases caused by infection[10].

There are no other existing comparative studies for various causes. VDRL reactivity: Among the 46 cases evaluated for VDRL, 6 cases exhibited reactivity, accounting for 12% of the total. The remaining 40 cases were non-reactive, while testing was not performed in 4 cases. Out of six cases of VDRL reactivity, three cases exhibited dilution below 1:8 and among these, one patient tested positive for HIV antibodies.

There are two cases of primary chancre and one case of secondary syphilis. In their investigation of 100 instances, Vinod Sharma *et al*. colleagues discovered that all cases were non-reactive for VDRL. HIV testing: Among the 33 cases that were tested for HIV antibodies, 5 cases tested positive for HIV whereas 28 cases tested negative. Out of the 5 patients, 2 were diagnosed with Candidial balanoposthitis, 1 had chancroid and another had secondary syphilis with a positive VDRL titer of 1:16. Association of diseases that occur simultaneously or affect the entire body. In this investigation, a total of 30 individuals were identified as having both systemic and cutaneous diseases. There were 18 cases of diabetes mellitus, 3 cases of lichen planus, as well as cases of psoriasis, pemphigus vulgaris, Bechets, multiple sclerosis, herpes zoster and Tinea cruris.

CONCLUSION

Balanoposthitis is a frequently observed ailment in STD clinics. Balanoposthitis is influenced by various causes and has a complex origin. It is predominantly observed in individuals who are sexually active and in most instances, the presence of sexually transmitted diseases (STDs) is a significant contributing factor. The different elements that can cause or contribute to a particular event, such as the accumulation of smegma, urine, alkaline vaginal discharge, friction from clothing, and exposure to unclean vaginal bacteria. Accurate determination of the cause of a condition necessitates conducting suitable investigations based on clinical symptoms. However, establishing the precise cause can be challenging, especially in cases when there is a lack of sufficient laboratory resources. The prevalence of infectious causes was higher compared to other potential causes, as indicated by the substantial number of instances where candidial infection was identified as the underlying cause. It should be noted that approximately 30% of the candidial infection cases were associated with diabetes mellitus as a predisposing factor. Balanoposthitis can cause significant distress to patients due to its propensity to recur in a substantial portion of individuals. If the patient is not alleviated of symptoms while receiving proper and sufficient treatment, it can further contribute to their psychological distress. Balanoposthitis, the inflammation of the glans and prepuce, might serve as a potential pathway for acquiring HIV infection. This issue becomes more significant when considering that the majority of cases occur in individuals of sexually active age. The treatment aims to eradicate the underlying cause, whether it is localised or systemic. Chronic and recurring inflammation of the foreskin and glans requires a thorough investigation to determine the underlying reason. In certain circumstances, circumcision may be the most effective solution. The objective of treating balanoposthitis is to alleviate the symptoms, minimise consequences and restore sexual function. An frequently overlooked part of treatment is the maintenance of genital cleanliness, which is crucial. Therefore, it can be inferred that providing comprehensive health education will greatly benefit the treatment and care of this particular group of patients. Providing education on STDs and preventive measures to individuals at risk can potentially reduce the occurrence of balanoposthitis and STDs.

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