Original Article

Sexual Dysfunction Evaluation in Candidal Balanoposthitis: A Single Centred Observational Study

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Abstract

Objective: A common genito-urinary infection known as Balanoposthitis presents with mild symptoms like itching or severe complications such as phimosis, ulceration of glans, and foreskin. It can result in four types of sexual dysfunction including Disorder of sexual desire, Disorder of erectile dysfunction, Disorder of satisfaction/premature ejaculation, and Disorder of orgasm.

Materials and methods: An observational clinic study including 50 patients diagnosed with Candidal Balanoposthitis based on KOH and clinical findings were recruited and evaluated for sexual function using a standardised questionnaire.

Results: The results demonstrated that sexual dysfunction in patients with Candidal Balanoposthitis is a common entity encountered in STI clinics and should be addressed properly as any deficiency in any aspect of sexual health of a patient can lead to emotional and psychological disability impacting the overall quality of the life. The factors like advanced age, Diabetes Mellitus, and poor hygiene measures of genitalia can increase the incidence of candidal Balanoposthitis as well as sexual dysfunction.

Conclusion: Candidal Balanoposthitis, a common cause of sexual dysfunction in elderly population takes a toll on emotional and psychological health and certain modifiable factors like diabetic control and hygiene can prevent recurrent fungal infections.

Keywords: Balanoposthitis; Candida Albicans; Sexual Dysfunction

Introduction

A commonly encountered condition in the genito-urinary clinics worldwide is balanoposthitis, inflammation of both glans penis (balanitis) and foreskin (posthitis) (1). It is generally seen in immunocompromised patients like diabetics and the infection is mostly caused by a fungal organism known as Candida Albicans (2,3). Candida Albicans form filamentous pseudohyphae for penetration into the mucosal surface and produce a toxin known as candidalysin which causes epithelial cell damage resulting in an inflammatory lesion over the genitalia (4). It can present as mild itching, burning sensation, pain and swelling with erythematous papules, discharge over the glans and radial fissures, and edema over the preputial skin (4). Even though these

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mentioned symptoms are mild but they can lead to serious complications like ulceration of glans and foreskin, phimosis, paraphimosis, meatal strictures (5). Despite all these symptoms and complications, it is significant to consider sexual dysfunction in patients affected by balanoposthitis.

Sexual dysfunction is defined as any difficulty experienced by an individual or a couple during sexual intercourse. It is common among men regardless of their age, cultural background, and ethnicities. It has a profound effect on the overall life quality of men (6). These sexual dysfunction disorders are classified into four groups: Disorder of sexual desire, Disorder of erectile dysfunction, Disorder of satisfaction/premature ejaculation, and Disorder of orgasmic.

Firstly, DSM-5 defines a disorder of sexual desire as a lack of sexual fantasy and desire for sexual activity. It is quite stressful for an individual as well as for the couple. The exact cause for this type of sexual dysfunction disorder is unknown, but there are several exclamations include excessive worry, sexual aversion, and hormonal influence (7).

Secondly, erectile dysfunction is defined as the inability to generate sufficient penile body pressure to achieve vaginal penetration or simply the inability to maintain the degree of penile rigidity until ejaculation (8). It is associated with depression, panic disorders, and perfectionism (9,10). It has also been attributed to several vasculogenic and treatment-related causes (11).

Thirdly, according to ICD -10, disorders of satisfaction/premature ejaculation happen when semen ejaculation or termination of sexual activity occurs within a few moments of the beginning of sexual activity and with minimal penile stimulation, usually within 15 seconds (12). The cause is unclear, and some causative factors include performance anxiety, passive-aggressiveness, or having sexual intercourse rarely.

Lastly, orgasmic dysfunction refers to difficulty in reaching an orgasm despite sexual arousal and stimulation. It is divided into primary: orgasm has never been achieved or secondary/situational: orgasm is achieved in certain circumstances, but not all the time. The causes of primary orgasmic dysfunction include the absence of bulbocavernosus reflex and hypogonadism whereas secondary causes can be physiological or psychological. Physiological causes are neuropathies (due to diabetes, multiple sclerosis, etc), prostate disease, substance abuse(heroin), drugs like antidepressants, antipsychotics, and opiates. Psychological causes include general mental health disorders (anxiety, stress, depression, hostility) sexual performance anxiety, sexual abuse, and phobias.

At, our Institute, we came across several patients of Candidal Balanoposthitis who reported various sexual activity-related complaints resulting in the idea of conducting a study evaluating sexual dysfunction in patients affected by Candidal Balanoposthitis. The aims and objective of the study:

1. To assess various domains of sexual function in patients with Candidal Balanoposthitis.
2. To assess the degree of sexual dysfunction in relation to other concomitant diseases like diabetes and hypertension.

Materials and methods

Study Location: Sexually Transmitted Diseases (STD) clinic of Tertiary hospital of Northern India.

Study subjects: 50 patients were evaluated both clinical and microscopically assigned randomly after obtaining informed consent. The participants were selected based on the following criteria.

Inclusion criteria

1. Patients who gave informed consent.
2. Patients who reported sexual dysfunctions.
3. Patients with KOH preparation positive for yeast infection.

Exclusion criteria

1. Patients with KOH preparation negative for yeast infection.
2. Patients who denied inclusion in the study.

The study subjects were supposed to be diagnosed with Candidal Balanoposthitis. This diagnosis was based on the KOH exam performed using lesions from the genitalia was done which revealed multiple budding yeast cells and pseudohyphae depicting Candidal yeast infection, thus labeling the infection as Candidal Balanoposthitis.

Once the diagnosis was confirmed, the participants were considered as study subjects and were evaluated for sexual function assessment (SFA) using a questionnaire duly filled by them. The questionnaire was prepared by modifying standard validated male sexual function questionnaire (13). The questionnaire consisted of 13 questions (four questions on sexual desire, three on satisfaction, four on erectile dysfunction, and two on orgasmic function), each scored from one to five depicting their sexual health, making 65 as the maximum score. The scores were interpreted as:

- if the score was less than 35, then subjects' sexual

dysfunction was considered unsatisfied
- if the score was between 36-50, then subjects were labeled as moderately satisfied with their sexual function
- if the score was more than 50, then participants were considered fully satisfied with their sexual life.

These scores were calculated for each domain and overall total by using SPSS software descriptively and analytically for tabulated and statistically collected data. To investigate the associations of socio-demographic and clinical characteristics of the patients with sexual dysfunction the chi-square test was used.

Results

In this study, the distribution of the recruited study participants as:

- majority of the subjects belonged to the age group, 25 to 40 years, accounting for 46% of the total subjects
- 56% of subjects were residents of urban areas
- 90% of subjects were married
- An equal distribution (50% each) of subjects with an active and sedentary lifestyle or occupation.
- 52% of subjects had the disease with a varied duration ranging from one to six months.
- Only 8/50 subjects had good hygiene measures of the genitals while 36 had satisfactory and six had poor hygiene measures.
- 34% had a history of illicit sexual contact before the onset of the disease
- 40% of subjects had a partner with a history of vaginal discharge
- 52% of subjects were diabetics with the majority (57.6%) diagnosed with Diabetes Mellitus within the last one to five years.
- Only 10/50 patients were hypertensive
- Half of the participants were alcoholics while smoking was seen in 10%.
- 98% of patients had symptoms of itching while burning sensation and pain were seen in 40% and 76% patients respectively. The clinical and demographic profile of the subjects is shown in table 1.

Sexual dysfunction was observed in 39 (78%) subjects of the 50 Candidal Balanoposthitis diagnosed cases. The majority (58%) of participants were moderately satisfied, eleven patients (22%) were fully satisfied, and 10(20%) were unsatisfied. The distribution of sexual dysfunction among various socio-demographic and clinical parameters is shown in table 2.

Discussion

Most of the patients (78%) were sexually dysfunctional suggesting a possible role of Candidal Balanoposthitis resulting in significant morbidity. The study showed a significant impact of advanced age on sexual dysfunction, as most of the patients in the group of 60 years old or above were unsatisfied with their sexual function.

There was a considerable statistical difference when correlating age with sexual dysfunction with a p-value of 0.001 on the chi-square test. There have been several past studies whose results are incongruent to our present study's results indicating advancing age as an independent factor for sexual dysfunction (14,15). This could be due to various factors, including changes in the hormonal milieu or urological conditions common among the elderly (16,17).

In the current study, there were a significant number of diabetic participants who had sexual dysfunction ranging from moderately satisfied to unsatisfied sexual satisfaction. There was a statistically significant difference as the results showed 16/26 diabetic subjects were moderately satisfied and the rest of the 10 subjects were completed unsatisfied. A similar study conducted in the USA showed that about 50% of men with sexual dysfunction were diabetic (18). Similarly, a study in the Netherlands suggested high rates of sexual dysfunction in diabetic patients (19). Several mechanisms have been proposed in the causation of erectile dysfunction in diabetic patients. Firstly, hyperglycemia leads to the formation of several free radicals and reactive oxygen species which interfere with erectile dysfunction. Secondly, vascular changes, both macro, and micro degenerations lead to atherosclerosis and nerve damage respectively resulting in sexual dysfunction, both erectile dysfunction, and premature/retrograde ejaculations.

In addition, hygiene measures are another crucial parameter that prevents the initial occurrence and recurrence of Candidalbalanoposthitis. Poor hygiene measures of the genitals lead to a sequel of fibrosis, which is a risk factor for candidal overgrowth resulting in balanoposthitis.

Table 1: Clinical and demographic profile of the subjects

		Overall Sexual Function			Total
		Satisfied (%)	Moderately Satisfied (%)	Unsatisfied (%)	
Address	Rural	8(16%)	11(22%)	3(6%)	22(44%)
	Urban	3(6%)	18(36%)	7(14%)	28(56%)
Age (years)	<25	7(14%)	1(2%)	0	8(16%)
	25-40	4(8%)	18(36%)	1(2%)	23(46%)
	41-60	0	8(16%)	5(10%)	13(26%)
	>60	0	2(4%)	4(8%)	6(12%)
Occupation	Sedentary	6(12%)	14(28%)	5(10%)	25(50%)
	Active	5(10%)	15(30%)	5(10%)	25(50%)
Marital status	Married	7(14%)	28(56%)	10(20%)	45(90%)
	Unmarried	4(8%)	1(2%)	0	5(10%)
Duration	<1 month	3(6%)	10(20%)	6(12%)	19(38%)
	1-6 months	8(16%)	16(32%)	2(4%)	26(52%)
	>6 months	0	3(6%)	2(4%)	5(10%)
Hygiene	Good	6(12%)	2(4%)	0	8(16%)
	Satisfactory	5(10%)	22(44%)	9(18%)	36(72%)
	Poor	0	5(10%)	1(2%)	6(12%)
Illicit contact	Absent	4(8%)	20(40%)	9(18%)	33(66%)
	Present	7(14%)	9(18%)	1(2%)	17(34%)
Vaginal discharge in partner	Absent	4(8%)	19(38%)	7(14%)	30(60%)
	Present	7(14%)	10(20%)	3(6%)	20(40%)
Diabetes	Absent	11(22%)	13(26%)	0	24(48%)
	Present	0	16(36%)	10(20%)	26(52%)
Diabetes duration	<1 year	0	3(11.53%)	1(3.8%)	4(15.3%)
	1-5 year	0	11(42.3%)	4(15.3%)	15(57.6%)
	>5 year	0	2(7.6%)	5(19.2%)	7(26.9%)
Hypertension	Absent	10(20%)	23(46%)	7(14%)	40(80%)
	Present	1(2%)	6(12%)	3(6%)	10(20%)
Alcohol intake	Absent	5(10%)	15(30%)	5(10%)	25(50%)
	Present	6(12%)	14(28%)	5(10%)	25(50%)
Smoking	Absent	11(22%)	25(50%)	9(18%)	45(90%)
	Present	0	4(8%)	1(2%)	5(10%)
Pain	Absent	4(8%)	5(10%)	3(6%)	12(24%)
	Present	7(14%)	24(48%)	7(14%)	38(76%)
Itching	Absent	0	1(2%)	0	1(2%)
	Present	11(22%)	28(56%)	10(20%)	49(98%)
Burning sensation	Absent	8(16%)	15(30%)	7(14%)	30(60%)
	Present	3(6%)	14(28%)	3(6%)	20(40%)

As Balanoposthitis is a painful and irritating condition, thus this would be a considerable reason for loss of sexual function. In our study, we found a significant statistical ($p = 0.002$) difference in sexual dysfunction in terms of hygiene measures of the genitalia.

Other parameters evaluated in the present study were duration of disease, multiple sexual partners, and partner history of genital discharge; even though these parameters had a considerable effect on the patient, they were statistically insignificant. On the other hand, parameters like hypertension, alcohol, and smoking are pathological factors in men's sexual dysfunction as elaborated in several studies (20).

Furthermore, symptoms like pain, itching and burning sensation over external genitalia associated with Candidal Balanoposthitis had insignificant statistics in hindering the sexual health of patients.

Limitations: The study is limited by small population group as well as high Prevalence of Diabetes mellitus in patients of Candidal Balanoposthitis which is one of the strongest confounder in the study.

Table 2: Distribution of sexual dysfunction

		Overall Sexual Function			x^2	P value
		Satisfied (%)	Moderately Satisfied (%)	Unsatisfied (%)		
Address	Rural	36.4	50.0	13.6	4.913	0.086
	Urban	10.7	64.3	25.0		
Age (years)	<25	87.5	12.5	0.0	38.310	<0.001**
	25-40	17.4	78.3	4.3		
	41-60	0.0	61.5	38.5		
	>60	0.0	33.3	66.7		
Occupation	Sedentary	24.0	56.0	20.0	0.125	0.939
	Active	20.0	60.0	20.0		
Marital status	Married	15.6	62.2	22.2	10.989	0.004*
	Unmarried	80.0	20.0	0.0		
Duration	<1 month	15.8	52.6	31.6	6.73	0.150
	1-6 months	30.8	61.5	7.7		
	>6 months	0	60.0	40.0		
Hygiene	Good	75.0	25.0	0	16.92	0.002*
	Satisfactory	13.9	61.1	25		
	Poor	0	83.3	16.7		
Illicit contact	Absent	12.1	60.6	27.3	6.98	0.03*
	Present	41.2	52.9	5.9		
Vaginal discharge in partner	Absent	13.3	63.3	23.3	3.345	0.188
	Present	35.0	50.0	15.0		
Diabetes	Absent	45.8	54.2	0	21.264	<0.001**
	Present	0.0	61.5	38.5		
Diabetes duration	<1 year	0	75	25	4.40	0.11
	1-5 year	0	73.3	26.7		
	>5 year	0	28.6	71.4		
Hypertension	Absent	25.0	57.5	17.5	1.452	0.484
	Present	10.0	60.0	30.0		
Alcohol intake	Absent	20.0	60.0	20.0	0.125	0.939
	Present	24.0	56.0	20.0		
Smoking	Absent	24.4	55.6	20.0	1.686	0.434
	Present	0	80.0	20.0		
Pain	Absent	33.3	41.7	25.0	1.845	0.397
	Present	18.4	63.2	18.4		
Itching	Absent	0	100	0	0.739	0.690
	Present	22.4	57.1	20.4		
Burning sensation	Absent	26.4	50.0	28.3	1.98	0.370
	Present	15.0	70.0	15.0		

Chi-Square Test: $p > 0.05$; Not significant; *$p<0.05$; Significant; **$p<0.001$; Highly significant

Conclusion

Sexual dysfunction in Patients with Candidal Balanoposthitis is a common entity encountered in STI clinics and should be addressed properly keeping in mind all aspects of sexual health of a patient since this can lead to emotional and psychological disability. With advancing age the incidence of Candidal Balanoposthitis increases and so does the sexual dysfunction. Similarly, diabetes status which correlates with sexual dysfunction is a precipitating factor for Candidal Balanoposthitis. Another significant factor is poor hygiene measures of genitalia which have a role in deteriorating sexual function. Therefore, a prompt treatment of modifiable factors (infections) is of utmost value in restoring sexual health.

Conflict of Interests

There is no conflict of interest among the authors.

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