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Prevalence and Risk Factors for the Occurrence of Vaginal Candidiasis in Women of Childbearing Age at the University Hospital Center of Brazzaville

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Abstract

Introduction: Vaginal candidiasis is a mycosis caused by a yeast of the genus Candida. It affects more than 75% of women during periods of genital activity. Changes in vaginal pH due to a variety of factors contribute to the onset of the disease.

Objective: To determine the prevalence and risk factors associated with the occurrence of vaginal candidiasis in women received at the parasitology-mycology laboratory of the Centre Hospitalier Universitaire de Brazzaville (CHUB) for vaginal swab analysis.

Materials and methods: A descriptive and analytical cross-sectional study was conducted from July to October 2019. It involved all patients received at the CHUB parasitology-mycology and parasitic immunology laboratory for vaginal swab analysis. Socio-demographic, clinical and biological data were collected using a specially designed questionnaire. For each vaginal swab, direct examination and culture on Sabouraud chloramphenicol medium with and without actidione[*] were performed. Statistical analysis was performed by SPSS 20 using the *chi square* test and student's t test and multivariate logistic regression was performed. The test was significant when $p<0.05$.

Results: A total of 152 women were included in the study. The median age of patients was 32 years (24, 40). Direct examination was positive in 88 samples (48.7%). Culture results were positive in 34 patients, representing a prevalence of 22.4% of vaginal candidiasis. The majority of patients had only one sexual partner (79.4%), with no history of abortion (64.7%). They had taken antibiotics (2.9%), corticosteroids (5.9%) and diabetes (6.6%). 32.4% were pregnant. Intimate bathing was practiced by 38.2% of patients. 14.7% used community towels; 23.5% wore synthetic undergarments; 26.5% wore tight-fitting clothes and 26.4% had poor post-defecation cleansing habits ($p=0.003$). Symptoms associated with vaginal candidiasis were significantly leucorrhoea (38.2%; $p=0.000$), burning sensation (22.4%; $p=0.003$) and vulvar pruritus (35.5%; $p=0.016$). The risk factors associated with the occurrence of vaginal candidiasis were the presence of leucorrhoea and the coupled front-to-back/back-to-front mode of cleaning after defecation. Patients with leucorrhoea had a 4.21-fold increased risk of vaginal candidiasis, while those with a coupled front-to-back/back-to-front cleaning mode had a 28.97-fold increased risk.

Conclusion: The results of our study showed the frequency of vaginal candidiasis among women seen at Brazzaville university hospital. The risk factors associated with the occurrence of vaginal candidiasis were the presence of leucorrhoea and the coupled front-to-back/back-to-front cleaning method.

Keywords: Vaginal mycosis; Leucorrhoea; Vaginal sampling; Risk factors

Introduction

Vaginal candidiasis is a mycosis caused by the presence of a fungus of the genus Candida in the vagina [1-3]. It is the most common genital infection in women. It affects almost 75% of sexually active women and pregnant women [4-7]. This fungus, considered saprophytic, can become pathogenic through a combination of factors. These factors may include an increase in estrogens secondary either to oral contraception or pregnancy; the presence of poorly balanced diabetes, which favors Candida adhesion to epithelial cells; the use of local or systemic broad-spectrum antibiotic therapy; the existence of HIV/AIDS infection. Other factors, such as genetic factors (race, blood group), factors linked to women's behavior (clothing hygiene, intimate hygiene, frequency of certain sexual practices), mechanical contraception (intra-uterine device, vaginal ring) [8].

With the aim of improving patient care and raising awareness of the risk factors for Vaginal Candidiasis (VC), we conducted this study to determine the prevalence and risk factors associated with the occurrence of vaginal candidiasis in women referred to the parasitology-mycology laboratory at the Brazzaville University Hospital (CHUB) for vaginal swab analysis.

Materials and Methods

We conducted a descriptive and analytical cross-sectional study from July 15 to October 31, 2019 at the CHUB parasitology-mycology laboratory. All patients who came to the sampling room during the study period for vaginal swab analysis were included after completing a consent form. Socio-demographic data (age, profession, level of education), clinical data (medical and gynaecological history, symptoms) and the result of the mycological analysis were collected using a survey form.

Each sample collected was measured for vaginal pH using a colorimetric strip and examined macroscopically to assess the appearance of the leucorrhoea and vaginal mucosa. Direct microscopic examination for yeasts and culture on Sabouraud chloramphenicol medium were performed.

Culture media were incubated at 37°C in an aerobic atmosphere for 24 hours. The data collected were analyzed using Epi-info 7.2.2.6 software. Qualitative variables were described in terms of headcount and percentage of data completed; quantitative variables were described in terms of means and standard deviation. Proportion comparisons were made using Pearson's *chi-square* test or Fisher's exact test, depending on applicability. Logistic regression was used to determine factors associated with the occurrence of vaginal candidiasis. The test was significant when the p was less than 0.05.

Results

A total of 152 patients were enrolled in this study. The median age of the patients was 32 years, with q1: 24 years and q3: 40 years. Table 1 shows the socio-demographic characteristics of patients with vaginal candidiasis. One hundred and fifty-two samples were collected, of which 88 were positive on direct examination (48.7%) and 34 were positive after culture (22.4%).

Table 1: Socio-demographic characteristics of patients with vaginal candidiasis.

Variables	Vaginal candidiasis				Total N=152	p
	Yes		No			
	N=34	%	N=118	%		
Age (years)						
14-24	9	26.5	33	28.0	42	0.839
25-35	10	29.4	37	31.3	47	
36-46	7	20.6	28	23.7	35	
47-57	6	17.6	12	10.2	18	
≥ 58	2	5.9	8	6.8	10	
Occupation						
Without	18	52.9	47	39.8	65	0.193
With	16	47.1	71	60.2	87	
Educational level						
Illitrate	0	0.0	3	2.5	3	0.747
Primary	2	5.9	6	5.1	8	
Secondary	19	55.9	71	60.2	90	
University	13	38.2	38	32.2	51	
Marital status						
Single	19	55.9	85	72.0	104	0.169
Married	15	44.1	33	28.0	48	

The age groups most affected by candidiasis were and with 29.4% and 26.5% respectively. Unemployed patients were most likely to suffer from vaginal candidiasis, with a frequency of 52.9%. Most were single and unemployed. Antibiotic and corticosteroid use were not significantly associated with vaginal candidiasis (p=0.077; p=0.417). Gyneco-obstetrical characteristics were not significantly associated with the occurrence of vaginal candidiasis (Table 2) [9].

Table 2: Gyneco-obstetrical characteristics of patients with vaginal candidiasis.

Variables	Vaginal candidiasis				Total N=152	p
	Yes		No			
	N=34	%	N=118	%		
Notion of virginity						
Yes	3	8.8	2	1.7	5	0.065
No	31	91.2	116	98.3	147	
Partner						
Single	27	79.4	109	0.9	136	0.102
Multiple	1	2.9	1	6.8	2	
No	6	17.7	8	92.4	14	
Notion of abortion						
Yes	12	35.3	57	48.3	69	0.179
No	22	64.7	61	51.69	83	
Notion of gynaecological illness						
Yes	2	5.9	13	11.0	15	0.384
No	32	94.1	105	89.0	137	
Notion of pregnancy						
Yes	11	32.4	50	42.4	61	0.294
No	23	67.6	68	57.6	91	
Treatment for candidiasis						
Yes	7	20.6	13	11.0		0.151
No	27	79.4	105	89.0		

Among hygienic characteristics, only the method of cleaning after defecation was significantly associated (p=0.003) with the occurrence of vaginal candidiasis (Table 3).

Table 3: Hygienic characteristics of patients who have had vaginal candidiasis.

Variables	Vaginal candidiasis				Total N=152	p
	Yes		No			
	N=34	%	N=118	%		
Intimate baths						
Yes	13	38.2	34	28.8	57	0.297

No	21	61.8	84	71.2	105	
Shared use of towels						
Yes	5	14.7	16	13.6	21	0.862
No	29	85.3	102	86.4	131	
Shared use of underwear						
Yes	2	5.9	5	4.2	7	0.688
No	32	94.1	113	95.8	145	
Wearing synthetic underwear						
Yes	8	23.5	27	22.9	35	0.937
No	26	76.5	91	77.1	117	
Wearing tight clothing						
Yes	9	26.5	53	44.9	62	0.057
No	25	73.5	65	55.1	90	
Cleaning mode						
Front to back	25	73.5	102	86.4	127	0.003
Back to front	2	5.9	13	11.0	15	
Both	7	20.6	3	2.6	10	

Table 4 shows that leucorrhoea, burning sensation and genital pruritus were the symptoms most significantly associated with vaginal candidiasis (p=0.000; p=0.003: p=0.016).

Table 4: Symptoms of patients with vaginal candidiasis.

Variables	**Vaginal candidiasis**				**Total N=152**	**p**
	Yes		**No**			
	N=34	**%**	**N=118**	**%**		
Genital pruritus	18	52.9	36	30.5	54	0.016
Leucorrhoea	22	64.7	36	30.5	58	0.000
Burning sensation	14	41.2	20	83.1	34	0.003
Dyspareunia	8	23.5	24	20.3	32	0.689

After logistic regression, the risk factors associated with the occurrence of vaginal candidiasis are shown in Table 5 [10].

Table 5: Risk factors associated with the occurrence of vaginal candidiasis in patients who consulted the CHUB parasitology-mycology laboratory.

Variables	**Vaginal candidiasis**		**OR (IC95%)**	**p**
	Yes	**No**		

	N=34	%	N=118	%		
Occupation						
With	16	47.1	71	60.2	1.72 (0.45-6.56)	0.429
Without	18	52.9	47	39.8	Ref.	
Marital status						
Married	15	44.1	33	28.0	1.27 (0.37-4.36)	0.703
Single	19	55.9	85	72.0	Ref.	
Notion of taking antibiotics						
Yes	1	2.9	19	16.1	-	1.000
No	33	97.1	99	83.9		
Notion of virginity						
Yes	3	8.8	2	1.7	8.50 (0.33-218.90)	0.196
No	31	91.2	116	98.3	Ref.	
Notion of abortion						
Yes	12	35.3	57	48.3	0.47 (0.14-1.57)	0.221
No	22	64.7	61	51.69	Ref.	
Treatment for candidiasis						
Yes	7	20.6	13	11.0	2.60 (0.48-14.11)	0.268
No	27	79.4	105	89.0	Ref.	
Wearing tight clothing						
Yes	9	26.5	53	44.9	0.62 (0.15-2.46)	0.494
No	25	73.5	65	55.1	Ref.	
Cleaning mode						
Front to back	25	73.5	102	86.4	1.71 (0.22-12.83)	0.598
Both	7	20.6	3	2.6	28.97 (1.81-462.55)	0.017
Back to front	2	5.9	13	11.0	Ref.	
Genital prurit						
Yes	18	52.9	36	30.5	1.96 (0.54-7.10)	0.307
No	16	47.1	82	69.5	Ref.	
Leucorrhoea						

Yes	22	64.7	36	30.5	4.21 (1.16-15.33)	0.029
No	12	35.3	82	69.5	Ref.	
Burning sensation						
Yes	14	41.2	20	83.1	2.25 (0.52-9.76)	0.279
No	20	58.8	98	16.9	Ref.	

After multiple logistic regression, two factors were identified as being associated with the occurrence of vaginal candidiasis: The method of cleaning after defecation and the existence of leucorrhoea. Patients with leucorrhoea were 4 times more likely to develop vaginal candidiasis than other patients. Those with a back-to-front and front to back cleaning pattern were 28 times more likely to develop vaginal candidiasis than other patients [11-13].

Discussion

Vaginal candidiasis, a vaginal infection caused by the development in women of a usually saprophytic yeast of the genus *Candida*, is a frequent infection in women of childbearing age. These yeasts were present in almost half of all women on direct examination. However, they were present in less than 20% of cases after culture. Several authors, on the other hand, isolated more *Candida* yeasts after culture than in the fresh state. This difference could be explained either by the greater carriage of *Candida* yeasts by women in our study or by differences between microscopists, as microscopy is an operator dependent technique [14].

The onset of vaginal candidiasis is multifactorial. Predisposing hormonal, metabolic, immune, genetic and behavioral factors have been incriminated [8]. These factors are found in varying degrees in different populations. Thus, in our study, we isolated factors related to hygiene and clinical signs. Leucorrhoea was a risk factor in women with vaginal candidiasis. In several studies, leucorrhoea has been considered one of the cardinal clinical signs of vaginal candidiasis in both *Candida albicans* and *Candida* non-albicans infections. But few authors have shown that they represent a risk factor for the onset of CV. This was the case for Konate A, et al., in Abidjan, who did not find leucorrhoea to be a risk factor for the onset of VC [15]. Ane-Anyangwe I, et al., showed that clinical signs were not a risk factor for vaginal candidiasis. However, by showing leucorrhoea as a risk factor, our study indicates that, in our environment, the presence of leucorrhoea in the event of a lower genital infection should suggest candidiasis. However, this is a finding that should be investigated by analyzing this sign in vaginal candidiasis and genital infections on a larger scale, as it may be at the origin of probabilistic prescribing, a practice that is currently outlawed due to the emergence of antimicrobial resistance.

The intestinal flora contains yeasts. These yeasts can be found in the vagina not only through certain sexual practices, but also through the way a woman cleans herself when she returns from the bathroom. This is because faecal germs can be found in the vagina or urine when faecal hygiene is not good. This is why cleaning after defecation has been considered a risk factor for vaginal candidiasis in the population of women consulting the laboratory. In the literature, we have not found this to be a risk factor. Zeng X, et al., in China, evaluated back-to-front and front-to-back cleansing and showed that cleansing was not a risk factor, but did not evaluate back-to-front and front-to-back cleansing as we did. However, Guzel AB, et al., in Turkey reported that patients with a short ano-vaginal distance had more vaginal candidiasis than others [16].

Conclusion

There are many risk factors for the onset of vaginal candidiasis. They vary according to the population studied. The factors associated with the occurrence of vaginal candidiasis in our context were the presence of leucorrhoea and the coupled front to back/back-to-front cleaning method.

References

1. Lopez JEM (2015) Candidiasis (vulvovaginal). Clinical evidence. 3: 815-838.
2. Anane S, Kaouech E, Zouari B, Belhadj S, Kallel K, et al. (2010) Vulvovaginal candidiasis: Risk factors and clinical and mycological particularities. J Mycol Med. 20: 36-41.
3. Benchellal M, Guelzim K, Lemkhente Z, Jamili H, Dehainy M, et al. (2011) Vulvovaginal candidiasis at the Mohammed V military training hospital (Morocco). J Mycol Med. 21: 106-112.
4. Viguie-Vallanet C (2005) Genital mycoses. 5: 20-27.
5. Konate A, Yavo W, Kassi FK, Djohan V, Angora EK, et al. (2014) Aetiologies and contributing factors of vulvovaginal candidiasis in Abidjan (Cote d'Ivoire). J Mycol Med. 24: 93-99.
6. Ogouyemi-Hounto A, Adisso S, Djamal J, Sanni R, Amangbegnon R, et al. (2014) Place of vulvovaginal candidiasis in the lower genital tract infections and associated risk factors among women in Benin. J Mycol Med. 24: 100-105.
7. Tsega A, Mekonnen F (2019) Prevalence, risk factors and antifungal susceptibility pattern of *Candida* species among pregnant women at Debre Markos Referral Hospital, Northwest Ethiopia. BMC Pregnancy Childb. 19:1-8.
8. Amouri I, Abbes S, Sellami H, Makni F, Sellami A, et al. Vulvovaginal candidiasis: A review. J Mycol Med. 20: 108-115.
9. Mogtomo ML, Njiki AN, Longang AM, Foko LP, Embolo E, et al. (2016) Prevalence of germs associated with vaginal infections in Cameroonian women and risk factors. Int J Biol Chem Sci 10: 25-68.

10. Sule-Odu AO, Akadri AA, Oluwole AA, Osinupebi OA, Andu BA, et al (2020) Vaginal *Candida* infection in pregnancy and its implications for fetal well-being. Afr J Reprod Health 24(3):33-40.

11. Ghaddar N, Anastasiadis E, Halimeh R, Ghaddar A, Dhar R, et al. (2016) Prevalence and antifungal susceptibility of *Candida albicans* causing vaginal discharge in pregnant women in Lebanon. BMC Infect Dis 18.

12. Cassone A (2015) Vulvovaginal *Candida albicans* infections: Pathogenesis, immunity and vaccine prospects. BJOG. 122: 785-794.

13. Tsatoromila FAM, Zafindraibe NJ, Ravaoarisaina ZM, Rakotozandrindrainy N, Rafalimanana C, et al. (2019) Vulvovaginal candidiasis in the parasitology-mycology laboratory of the CHU-JRA of Antananarivo Madagascar. IJPSAT 17: 75-80.

14. Ane-Anyangwe L, Meriki HD, Silum SP, Nsongomanyi FR, Zofou D (2015) Antifungal susceptibility profiles and risk factors of vaginal candidiasis amongst female university students in southwest region, Cameroon. Afr J Microbiol Res. 16(2):67-72.

15. Zeng X, Zhang Y, Zhang T, Xue Y, Xu H, et al. (2018) Risk f actors for VVC among women of childbearing age in Xi'an: A cross-sectional study. BioMed Res Int. 8.

16. Mtibaa L, Fakhfakh N, Kallel A, Belhadj S, Salah NB, et al. (2017) Vulvovaginal candidiasis: Etiology, symptomatology and risk factors. J Med Mycol. 27: 153-158.