



PREVALENCE OF CANDIDIASIS IN NON-PREGNANT WOMEN ATTENDING YUSUF DANTSOHO MEMORIAL HOSPITAL IN KADUNA STATE NIGERIA

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ABSTRACT

There have been frequent cases of candidiasis among women in Nigeria. The prevalence of candidiasis among non-pregnant women attending Yusuf Dantsoho memorial hospital in Kaduna State, Nigeria was investigated. High vaginal swabs, endo cervical and intra cervical swabs were collected from sixty (60) non-pregnant women. All samples were screened for Candida albicans using culture microscopy, germ tube and sugar fermentation tests. The study revealed that out of the sixty (60) non-pregnant women sampled, thirty five (35) were found to be positive for candidiasis indicating a prevalence rate of 58.3% in the study area. The pregnant women aged 24 to 29 recorded the highest prevalence (26.7 %) which is statistically significant ($p < 0.05$) and an indication that candidiasis is becoming more prevalent among non-pregnant women in this age group. The implication of this result in the light of the prevalence rate is discussed.

Key words: Candidiasis, prevalence, non-pregnant women, vaginal and cervical swabs.

INTRODUCTION

Vaginal candidiasis is a specific woman's genital tract infection caused by candida yeast-like fungi. Yeast belonging to the genus *Candida*, a component of the micro biota of healthy beings causes opportunistic mycoses around the world. It has been estimated that 30% of all vaginitis cases are caused by infection with *Candida* species. *Candida* species are found on plants and also reside in the alimentary tract of humans as normal commensals (Adad *et al.*, 2001). Among the species of *Candida*, *Candida albicans*, is the most common species causing infection in humans as well as other associated infections like arthritis, endophthalmitis, meningitis, myocarditis and myositis (Prescott *et al.*, 2005).

The yeast-like organisms being part of the normal flora within the vaginal area, do not cause infection in healthy individuals. However, in immune compromised patients, candida infection can affect the esophagus with the potential of becoming systemic, causing a much more serious condition called candidemia (Fidel, 2002). *Candida* organisms gain access to the vagina lumen and secretions mainly from the adjacent perianal area. Most women carry *Candida* in the vagina at some point in their lives without symptoms or signs of vaginitis and usually with a low concentration of the yeast organism (Sobel, 2007). At least once in a life time of about 75% of women experience vaginal candidiasis.

Previous reports have shown that women are more susceptible to infections with *C. albicans* when they undergo stress as a result of poor diet, lack of sleep or due to other illnesses (Nwosu *et al.*, 2007). Candidiasis sometimes infects the blood stream, liver or spleen and frequently colonizes the skin and mucous membrane (Fidel *et al.*, 2000). *Candida albicans* infection also causes food intolerance, gallbladder problem, poor sleep, memory problem, emotional symptoms and frequent urination during the day (John 2010). The use of detergents or douches, hormonal or physiological can affect the normal vaginal flora, consisting of lactic acid bacteria, such as lactobacilli, and result in an overgrowth of candida cells causing symptoms of infection, such as local inflammation (Mardhet *et al.*, 2003). *Lactobacillus acidophilus*, commonly found in the vagina, help prevent the overgrowth and subsequent infection by the yeast pathogens (Chatwaniet *et al.*, 2007). *Lactobacillus* can provide this protection by inhibiting both the adhesion of *C. albicans* to vaginal cells, thus reducing the growth of *C. albicans* to certain degree (Osset *et al.*, 2001). *C. albicans* was isolated more often from pregnant women (Ahmad and Khan, 2009). There are few reported literatures on the prevalence of vaginal candidiasis in non-pregnant women.

MATERIALS AND METHODS

Sample collection and handling

Prior to sampling, each patient's consent was obtained. Using sterile swabs, a total of sixty vaginal (60) samples, twenty (20) each from high vaginal swab (HVS), endo cervical swab (ECS) and intra cervical swab (ICS) were aseptically collected from non-pregnant women within the age range of 18 to 50 years, who came for tests at Yusuf Dantsoho memorial hospital Kaduna. Samples were transported in alcohol glycerol mixture (four parts of glycerol, two part of ethyl alcohol, four part of distilled water) to the laboratory for analyses.

Yeast Identification

The test was conducted according to the method adopted by Barnett *et al.* (1990). Prepared Sabouraud Dextrose Agar (SDA) plates were labeled and subsequently inoculated with HVS, ECS and ICS. An inoculum pool was made with swab specimen then, a sterile wire loop was used to spread the inoculum by streaking in quadrant to obtain discrete colonies. Incubation was at room temperature for 72 h under aerobic conditions. The cultural and morphological characteristics of the yeasts were studied. The tests included morphology, surface characteristics and the presence of pseudohyphae. Young colonies which appeared white to cream in colour with a smooth border and a pasty and moist consistency were observed

Germ Tube Test

Using a sterile loop, a small portion of a pure colony of *Candida* species was suspended in a sterile test tube containing 0.5ml of human serum. The resulting suspension was incubated aerobically at 37°C for 3 hrs. A drop of the yeast-serum suspension was placed on a clean microscope slide, covered with a cover slip and examined microscopically, using the x10 and x40 objective lenses. The appearance of small, sprouting tube-like outgrowths or filaments projecting from the cell surface with no constriction at the point of origin confirmed production of germ tubes (Elmer *et al.*, 1992).

Sugar Fermentation Test

It was conducted in accordance with the method of Batista *et al.* (2004). One percent (1%) sucrose in peptone water broth with bromocresol blue indicator was prepared and added to agar. The preparation was then poured into plates and allowed to cool. Suspected yeast cells were streaked on the plates and incubated at 37°C for 24 hours.

Evidence of sugar fermentation was indicated by a change in colour from cream to yellow. Results were presented using tables and descriptive statistics of frequency.

RESULTS

Out of 60 vaginal swab samples examined for cultural characteristics, 35 (58.32%) presumptive isolates of *Candida* were tested positive by germ tube test. Among the positive isolates, 80 % were from HVS, 60 % from ECS and 35 % from ICS respectively (Table 1). Further examination of the positive cases using sugar fermentation test, also showed high frequencies for the positive fermentation of sucrose (Table 2). The prevalence of candidiasis in women in the different age groups was shown in Table 3. The non - pregnant women that were within the age range of 24 to 29 recorded the highest prevalence of 26.7 % compared to other age groups which is statistically significant ($p < 0.05$). The only woman screened within the age group of 42 to 47 years was found to be negative.

DISCUSSION

The results of this study have shown that *Candida albicans* can be isolated from the vaginal cavities of non-pregnant women. The germ tube test for yeast cells in the present study was highly sensitive for the rapid identification of *C. albicans* as specific branches of pseudohyphae were observed from blood cultures. This is in agreement with similar studies conducted by Sobel (2007); Linhares. (2001) and AMBIYE (2000) who reported that *C. albicans* is an oval budding yeast that produces pseudohyphae in a yeast cultures.

Similar observation was made by Adeniran (2005) on the prevalence of *Candida albicans* in the oral and vaginal cavities of human immunodeficiency virus infected patients in a Lagos hospital. The percentage of women tested positive for candidiasis was approximately 58.3 % indicating the prevalence rate of the tested population. Similar studies were conducted by other researchers who obtained a lower prevalence rate of 30 % and 7.9 % (Sobel, 2007; Neerja, 2006).

The high prevalence rate of 26.66% women infected, who were within the age range of 24 to 29 years implies that candidiasis is prevalent in this particular age range of the study population and this may be attributed to personal hygiene or change in the normal level of vaginal pH.

Table 1: Identification of *Candida albicans* using germ tube test

S/N	Samples	Number screened	Number positive	Percentage positive (%)
1	HVS	20	16	80
2.	ECS	20	12	60
3.	ICS	20	7	35
Total		60	35	58.3

Key: HVS: High Vaginal Swab, ECS: Endocervical Swap, ICS: Intracervical Swap

Table 2: Biochemical identification of *Candidaalbicans* using sugar fermentation test

S/N	Samples	Number positive	Sugar fermentation test
1	HVS	16	Positive
2.	ECS	12	Positive
3.	ICS	7	Positive

Table 3: Frequency of candidiasis in relation to the age of women

Age	Number of samples screened	Number positive	Percentage positive (%)
18-23	6	4	6.66
24-29	28	16	26.66
30-35	20	12	20
36-41	5	3	5
42-47	1	0	0
Total	60	35	58.32

CONCLUSION

The prevalence rate of candidiasis among the study population of non-pregnant women attending Yusuf Dantsoho Memorial Hospital in Kaduna State was 58.3 %. Candidiasis is highly prevalent in non-pregnant women who were within the age range of 24 to 29yrs and were attributed to lack of personal hygiene and a change in the normal pH of the vagina.

RECOMMENDATION

Based on the findings from the current study the following recommendations are offered. Women should conduct routine tests on candidiasis infection. Those presented with signs of abnormality like abnormal discharge, vaginal irritation, abnormal pain should immediately see a gynaecologist. Antibiotic chemotherapy should be administered with prophylactic treatment of candidal drugs. Proper personal hygiene should be observed.

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Special Conference Edition, November, 2017

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