



The Incidence and Prevalence of *Candida albicans* infection of the urogenital tract of females between the ages of 18 and 45 years old: A Case study of Patients receiving treatment in Ashford and Patrice clinic in Port Harcourt

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Abstract

The incidence and prevalence of *Candida albicans* infection of females urogenital tract in Port Harcourt Urban area is quite high representing 18.9% of women investigated. It is more of an infection of those queried for urogenital tract infection than in pregnant and diabetic women, with a recorded 10.3%, 5.6% and 3.0% respectively. It was equally found to be high in sexually active women within the ages of 18 and 35. Analysis of variance (ANOVA) carried out on the various treatment options (i.e UTI, Pregnancy and diabetes) showed no significant difference at 95% probability level with respect to *Candida albicans* infection. Besides, antibiotics treatment also enhances the proliferation of the yeast. The incidence and prevalence of the infection was quite high but can be reduced in Port Harcourt Urban with an improved personal hygiene and adequate medical services available.

Keywords: Incidence, Prevalence, *Candidaalbicans*, urogenital tract and infection.

Introduction

The *Candida Albicans* infection is a yeast infection of the mouth, skin and urogenital tract of men and women, young and old. It is the genus mostly incriminated in candidiasis of the urogenital tract. Other species of *Candida* incriminated in this disease condition are *Candida tropicalis*, *Candida stellatoides*, *Candida parapsilosis* and *Candida crusei*. According to report of the centre for disease control and prevention, in 2001, there are more than twenty (20) species of genus *Candida* that can caused infection in human.

The distribution of *Candida albicans* is widely in normal and healthy individuals, and is usually found in mouth, gastrointestinal and urogenital tracts of females where they exist as normal flora. Yeast infections usually occur in warm and moist parts of the body¹. It flourishes in individuals with high blood sugar², and can also be found in other dark areas of the body. Clothing that is too tight or made of nylon materials that can trap heat and moisture may lead to yeast infection³. Other predisposing factors such as pregnancy, diabetes, broad-spectrum antibiotics therapy^{4,5}, administration of corticosteroids or immunosuppressive drugs, drug addiction and immunological deficiencies support the growth of *Candida*⁶⁻¹⁰. Besides, systematic conditions such as vitamin B deficiency, hypothyroidism and lymphoblastoma favours *Candida* infection¹¹⁻¹³. From the fore going, it is evident that the treatment of other infections with broad spectrum antibiotics increases the number of persons harbouring *Candida* in their intestine, vagina and perianal sites¹³⁻¹⁶.

The effect of antibiotics on proliferation of *Candidais* based on the fact that these drugs militate against susceptible microflora antagonistic to the fungi¹⁷, thereby enhancing their growth. Traumatic ulceration, postoperative situations, malnutrition, malignancy and anaemia also predisposes *Candidiasis*.

Candida albicans infection manifests in different parts of the body. In the vagina are found,itching, redness and a thick white vaginal discharge with occasional white patches on the skin of the vaginal area¹⁸. The irritation from vaginal *Candidiasis* is responsible for the physical discomfort experienced by some patients. The offensive vaginal discharge is a product of organic decomposition of the proteinous component on the vaginal mucosa. Vaginal *Candidiasis* of pregnant women may occur as mild vaginal infection and may not be connected with infection of the anus.

Vaginal and vulva *Candidiasis* also found at high frequency among sexually active people hence, the choice of the age bracket under study. Accordingly, as a girl matures, hormonal changes takes place making them more vulnerable to *Candida* infection¹⁹.

Prevention of *Candidiasis* can be by employing the use of unscented bath soaps, lotions, laundry detergents and gels. It is suggested that less fragrance free bath and cleansing products can be used^{17,19}.

This research focused on the incidence and prevalence of *Candida albicans* infection of the urogenital tract of female of

age 18 to 45 in Port Harcourt Urban Area and is limited to patients being treated in Ashford and Patrice Clinic for urogenital tract infection, antenatal and diabetic cases. It determined the influence of pregnancy and diabetes on *Candidiasis*.

Material and Methods

Cultural Materials: The culture media used were sabour and Dextros Agar (SDA), Blood Agar (BA), MacConkey Agar (MAC) and Corn Meal Agar (CMA) and were prepared according to manufacturers instruction^{20, 21, 22}. Stains and other chemical used were those of Difco and were of international standard.

Isolation and Identification Methods: The streak plate method was used²³⁻²⁵ and characterization was done based on colonial and cell morphology²⁵, germ tube formation and pseudohyphae and/or chlamylospore formation on corn meal agar^{23, 26, 27}. The staining methods were based on the work of Baker and Silverton²⁶.

Sample Collection: The samples collected for analysis were high vaginal swab (HVS) cervical swab (CS) and mid-stream urine. These samples were collected from hospital patients on antenatal, diabetes, vaginitis, vaginal rash and pains, pelvis inflammatory diseases (PID) dysuria and septic abortion. Urine samples were collected in 10mls sterile universal containers devoid of chemicals and detergents. The samples were taken to the laboratory for immediate analysis.

A total of two hundred and sixty-seven patients were investigated in four months covering September to December, 2013. All patients queried for the above stated cases were examined.

Results and Discussion

Table-1 represented the distribution of various samples sent to the laboratory for examination. A total of two hundred and sixty seven samples were collected and examined. Of these samples, twenty four (24) were collected from diabetic patients, sixty-five (65) from antenatal clinic and One hundred and seventy eight (178) from patients with symptoms of urogenital tract infection who were neither diabetic or pregnant. Table-2 showed the distribution of different micro organisms isolated

from different groups of patients (treatment options) that were examined.

Table-1
Distribution of Samples Examined

Month	Total No of Samples Collected	Samples from Diabetics	Samples From Antenatal Clinic	Samples From UTI Patients
September	54	8	8	38
October	64	4	12	48
November	85	10	20	55
December	62	2	15	45
Total	267	24	65	178

Table-2
Isolates From the Different Treatment Groups

Groups	Total No. of Samples	<i>Candida albicans</i>	Other Yeasts	Bacteria	Protozoa
Diabetic Patient	24	8	5	11	-
Antenal Patient	65	15	14	34	2
UTI Patients	178	18	23	114	14
Total	267	41	42	159	16

A total of 41 patients were diagnosed of *Candidaalbicans* infection representing 18.9% of the total number of patients examined. Of this percentage, UTI patients had the highest percentage of *Candida albicans*infection (10.3%). Diabetic patients and patients from antenatal clinic recorded 3.0 and 5.6% respectively. Bacteria were the most causative agents of urogenital tract infection (table-3) with a recorded 42,7%.

Other Yeasts and Protozoa had 8.6% and 5.2 respectively for urogenital tract infection, 5.2% and 0.7% respectively from antenatal clinic while other yeasts recorded 1.9% from diabetic patients examined. However, no protozoan was isolated from patients suffering from diabetes. From table-3 and figure-3 pregnant women appears to be more disposed to candidaisis than diabetic patients. The analysis of variance done showed that there is no significant difference at 95%probability level for the different treatment option with respect to *Candida albicaus* infection.

Table-3
Percentage of *Candida albicans*in Relation to Other Isolates from the Diagnosed Samples

Groups	Total No. of Samples	<i>Candida albicans</i>	Other Yeasts	Bacteria	Protozoa
Diabetic Patient	9.0	3.0	1.9	4.1	-
Antenal Patient	24.3	5.6	5.2	12.7	0.7
UTI Patients	66.7	10.3	8.6	42.7	5.2
Total	100	18.9	15.7	59.5	5.9

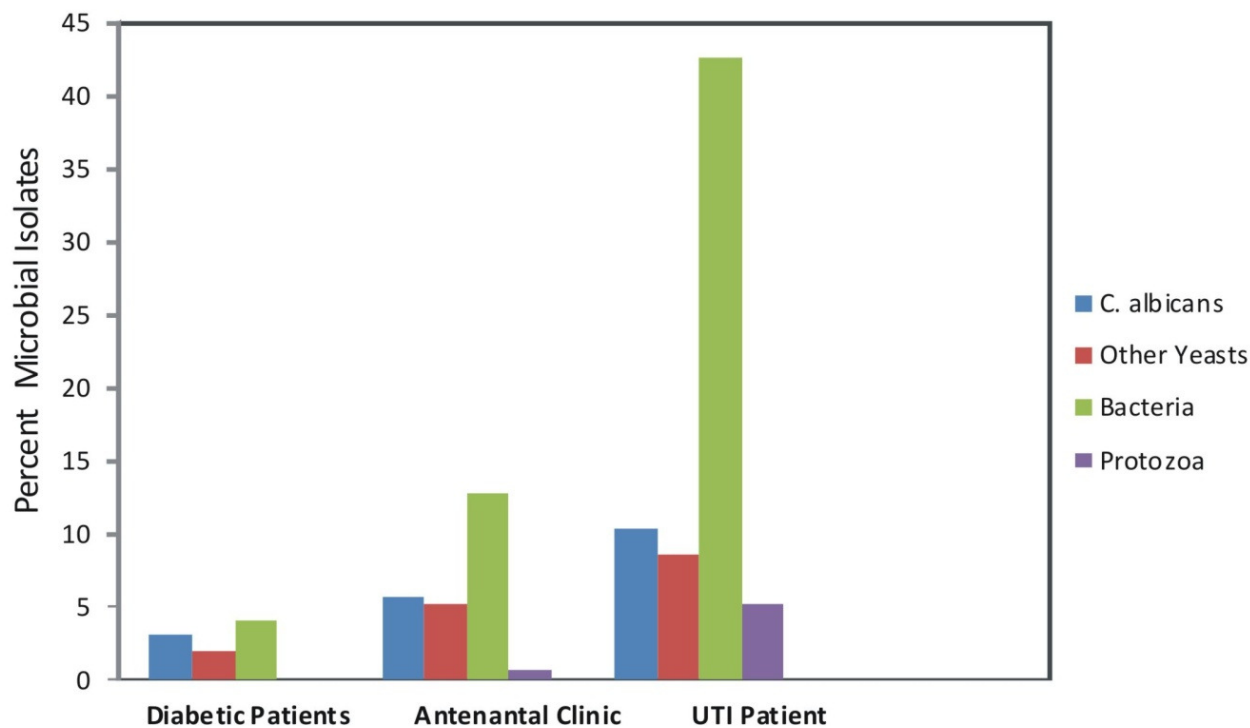


Figure-1
 Treatment Options

Discussion: This research put the incidence of *Candida albicans* infection of the urogenital tract of females age 18 to 45 in Port Harcourt Urban Area at 18.9%. This is in line with previous works done in some localities, which put the incidence at between 10 and 55%¹⁶. The isolates were found more in patients with symptoms of urogenital tract infection. The presence of some microorganisms (eg bacteria) may have provided a synergy that facilitated the growth of the fungi. This may be by generation of intermediate metabolites, which may alter the microbial environment eliminating some microbial flora and reducing competition for the limiting nutrients.

The proliferation of *Candida* in diabetic patients may be attributed to high level of blood sugar, which acts as energy source to the yeasts. In pregnancy, the hormonal change that goes with the condition may be responsible for the growth of the fungi. Larissa¹⁹ pointed out that hormonal changes that take place in women make them more vulnerable to *Candida* infection. Also, antibiotics treatment reduces the number of susceptible bacteria species that may be antagonistic to the fungi thereby enhancing their growth.

Although *Candidaalbicans* infection is not a classical sexually transmitted disease, it is known to be transmitted, in some cases, through sexual intercourse especially among sexually active persons and sex workers. This has been reported in cases of unprotected sex and person with multiple sex partners. Despite the predisposing factors enhancing the growth of this yeast, improved personal hygiene can further reduce the incidence.

Conclusion

The incidence and prevalence of *Candida albicans* infection in Port Harcourt Urban Areas was quite high. Of the total number of females examined, 18.9% showed evidence of the disease. The infection was more among patients queried for urogenital tract infection. However, diabetes, pregnancy and antibiotics treatment proved to support the growth of the yeasts. Improved personal hygiene and sexual discipline can help reduce the incidence of this disease.

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