

## Epidemiology of vulvo-vaginal candidiasis in female patients in Ondo state government hospitals

A.K. Onifade and O.B. Olorunfemi \*

Microbiology Dept., Federal University of Technology, P. M. B. 704, Akure, Nigeria.

\*e-mail: feyifemi2003@yahoo.co.uk

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### Abstract

The epidemiology of vulvo-vaginal candidiasis among female patients in government hospitals in Ondo State was investigated. The state was zoned into Akure, Ikare, Okitipupa and Ondo zones. High vaginal swab (HVS) samples were collected from the State Specialist Hospital in each zone. A total of 650 samples was examined within two months. Investigations revealed that incidence of candidiasis among female patients was 83%. *Candida albicans* accounted for 81.5% of the infections while other species of *Candida* accounted for 18.5%. Ikare has the highest incidence while Okitipupa had the lowest. The infection showed no age discrimination as it occurred in all the age groups tested.

**Key words:** *Candida albicans*, yeast infection, vaginal thrush.

### Introduction

Candidiasis is a mycotic infection caused by many species of *Candida*, the most important being *Candida albicans*, a commensal in oral cavity, upper respiratory tract, intestinal tract and the urinary tract of healthy individuals. Clinically, candidiasis is broadly divided into three groups as cutaneous, superficial and systemic candidiasis. Superficial (mucosa) candidiasis consists of chronic mucocutaneous candidiasis, oral candidiasis (oral thrush) and vulvo-vaginal candidiasis or vaginal thrush<sup>4</sup>.

Vulvo-vaginal candidiasis or vaginal thrush occurs in epithelial surfaces of the vulva, vagina and cervix of female. It is the commonest cause of vaginal itch. *Candida* burrows into the cells lining the vagina and the epithelial cells of the vulva. The infected superficial cells are shed into the vagina causing thick discharge. Vulvo-vaginal candidiasis is commonly associated with pregnancy, high estrogen level, oral contraceptives, diabetics, antibiotic use, dietary factors and poor hygiene. Symptoms include abnormal vaginal discharge ranging from slightly watery white discharge to a thick white chunky cheese-like discharge with offensive odour, vaginal smelling, vaginal and labal itching, redness and inflammation of vulva skin, painful intercourse and painful urination<sup>1</sup>.

Although vaginal candidiasis is not considered a sexually transmitted disease, 12 to 15% of men develop symptoms such as itching and lenile rash, particularly at the glands following sexual contact with an infected partner<sup>5</sup>. Increased prevalence of vaginitis has been associated with decline in CD4 cell counts, especially below 200, injudicious use of antibiotics, immuno-suppressive or cytotoxic agents, increase of sugar and alcohol intake, indiscriminate sexual act and not taking the general precautions that apply to infection transmission by contact or formitess<sup>6</sup>. This study was therefore aimed at determining the proportion of female that harbour *Candida* in the vulvo-vaginal tracts with a view to enhancing the

understanding of the epidemiology of vulvo-vaginal candidiasis and help in reducing its morbidity and mortality in Ondo State.

### Materials and Methods

High vaginal swab samples were collected from 650 female patients attending State Specialist Hospital in Akure, Ikare, Okitipupa and Ondo. Samples were immediately transferred to the laboratory for investigations. The diagnosis of candidiasis was based on the detection of significant count of *Candida* cells in the freshly collected samples using cultural method, germ tube test and by counting directly under the microscope.

**Cultural method:** Inoculated potato dextrose and Sabraud dextrose agar were incubated at 37°C for 24 hours and the fungal growth was observed microscopically. For the germ tube-test; a small portion of the positive colonies was inoculated into 0.5 ml human serum in a test tube. The tube was incubated at 37°C for 3 hours after which a drop of the inoculated serum was transferred onto a clean slide with cotton blue-in-lactophenol and covered with a coverslip. It was then observed under the microscope. Fermentation test was also carried out to determine the fermentative ability of the fungus isolated as a confirmative test for *Candida albicans*.

### Results and Discussion

The colonial appearance on culture plates, germ tube tests and fermentation reaction showed that the organisms isolated were *Candida* species. Those that were germ tube positive and which were further subjected to fermentation test were *Candida albicans* while those that were germ tube negative were other *Candida* species. A total number of 650 samples were tested of which 540 (83%) were positive for presence of candidiasis. All these patients were positive for germ tube test, thereby given 81.5% incidence of *Candida albicans* while other *Candida*

**Table 1.** Prevalence of vulvo-vaginal candidiasis among female patients in Ondo State.

Zone	No. examined	No. of positive	No. due to <i>C. albicans</i>	No. due to other <i>Candida</i> spp
Akure	375	310	255	55
Ondo	100	85	65	20
Ikare	100	90	75	15
Okitipupa	75	55	45	10
Total	650	540	440	100
% Incidence		83.0	81.5	18.5

species accounted for 18.5% of the infection (Table 1).

This work did not distinguish between patients with clinical symptoms of vaginitis and those without. It only examined all available samples of high vaginal swabs (HVS) for the presence of *Candida* species at the period. Most of the patients for HVS analysis usually have indications for the test other than vaginitis, such as investigation of fertility in women and pelvic inflammatory disease<sup>3</sup>.

The high incidence of *Candida* is aided by the selective action of the culture medium, Sabourand's dextrose agar used which favours yeast while inhibiting all associating bacterial flora. If a general culture medium like blood agar or nutrient agar was used the rate would have been lowered as many samples that showed scanty growth of *Candida* after 18 hours of incubation would have been present in larger numbers bacteria than the yeasts<sup>1</sup>. The results showed a high prevalence rate (83%) and a wide distribution of candidiasis in the state as there are relatively few women with symptomatic candidiasis. This shows that the pathogens, *Candida* species, are well-tolerated commensals in vulvo-vaginal tract. It can also be taken as indication of a high level of personal hygiene and natural immunity of women in the state. It is also of interest that a hundred percent prevalence was not obtained despite the fact that it is part of the normal flora of the vulvo-vaginal area<sup>2</sup>. This may be due to the few negative patients being on antifungal chemotherapy.

The ages of the patients examined ranged from 18 to 60 years. Candidiasis occurred in all the age groups (Table 2). Thus there was no age discrimination in candidiasis amongst the adult females, although there was variation in the proportion affected in the various age groups. The age group with the highest incidence rate was 31–40 years (38%), followed by age of 21–30 years (27.8%). This is probably because the age range 21–40 years is one of active reproduction in humans when most women get worried about pregnancy and related issues that bring them to the hospital to consult their doctors. Also worthy of note is the age group 51–60 years as the least number of cases but the highest prevalence of 100%. This is probably due to the fact that this is menopausal age when women don't bother so much again of pregnancy problem. Those few cases are very likely to symptomatic candidiasis as higher age generally increases the susceptibility of individuals to infection particularly opportunistic ones like candidiasis<sup>1</sup>.

The investigation revealed that there was a very high prevalence rate of candidiasis in Ondo State and most of the cases were not symptomatic. It is imperative therefore to note that women should be careful to indiscriminating use of broad spectrum antibiotic as this may result in the breakdown of natural immunity mechanism which keep *C. albicans* in check. Furthermore, excessive application of antiseptic agents like

**Table 2.** Age distribution of vulvo-vaginal candidiasis in Ondo State.

Age GP (yrs)	No. tested	No. positive	% Overall positive	GP %
1-10	-	-	-	-
11-20	85	60	11.1	70.6
21-30	215	150	27.8	72.1
31-40	220	205	38.0	93.2
41-50	90	85	15.7	94.4
51-60	40	40	7.4	100.0

commercial douches, perfume, feminine sprays, chlorinated water etc. should be avoided as these enhance *Candida* growth and thereby increase infection due to their antibacterial action. Also women, especially pregnant ones, should avoid tight, poorly ventilated and nylon underclothing which increases the moisture and temperature around the vulvo-vaginal region and so enhances *C. albicans* growth. The external area of this region should always be kept dry and airy as much as possible.

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