

PREVALENCE OF VULVOVAGINAL CANDIDIASIS AT A GYNAECOLOGICAL CLINIC IN KANO, NORTH-WEST NIGERIA

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INTRODUCTION

Vaginal discharge is a common complain in gynaecological and general practice.¹ In a survey of 500 women aged 15-40 years, who were attending the gynaecological and antenatal clinic at Lagos University Teaching Hospital, 85.8% responded in the affirmative when asked if they have experienced vaginal discharge occasionally or most of the times.¹ Schmidt et al reported a one year prevalence of vaginal discharge as 3.4%.²

Infections are common causes of vaginal discharge in the postpubertal and childbearing age. The common infections are bacterial vaginosis (50%), trichomona species (25%) and candida species (25%).³⁻⁵

The prevalence of vulvovaginal candidiasis has been reported as 24%^{2,6} and 18.5%⁷. Parveen et al, Maccato and Kaufman reported a high rate among pregnant women^{8,9} and Okonofua et al reported a high carriage of *Candida albicans* in Nigeria infertile women compared with control.¹⁰ Contrary to earlier report of 25%³ for *Trichomonas vaginalis* Anorlu, et al reported a prevalence of 74.5% in Lagos.¹¹ At the postmenopausal period vaginal discharge is usually due to atrophic vaginitis.^{4,12} Vulvovaginal 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. Other less common causes are *candida glabrata* and *krusei*.¹³ 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.¹⁴ Vulvovaginal candidiasis is commonly associated with pregnancy, immunosuppression, use of steroids, diabetes mellitus, vaginal douching, increased oestrogen, high doses of oral contraceptive pills, underlying dermatosis, use of

ABSTRACT

Background: Vaginal discharge is a common complain in gynaecological and general practice.

Objectives: To determine the prevalence of vulvovaginal candidiasis and how age, marital status and stages of reproduction affect this disease.

Methods: High vaginal swab samples were collected from 859 women who presented with vaginal discharge at the gynaecological clinic. The data obtained was analysed using SPSS 14.0 statistical software. Absolute numbers and simple percentages were used to describe categorical variables. Similarly, quantitative variables were described using measures of central tendency and measures of dispersion as appropriate.

Results: The prevalence of vaginal discharge in this review was 7%. *Candida albicans* infection constituted 84.5% of cases presenting with vaginal discharge. Vulvovaginal candidiasis was commoner among those 15-45 years (96.2%), than those <15 years (3.2%) and >45 years (0.6%). Moreover, the unmarried bear a greater burden of the infection (52%) than the married (48%) and this difference was statistically significant ($p=0.001$).

Conclusion: *Candida albicans* infection is the commonest cause of pathologic vaginal discharge in Aminu Kano Teaching Hospital, Kano, Nigeria and it is commoner in the unmarried and in those within the reproductive age group.

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broad spectrum antibiotics, dietary factors and poor hygiene.^{4,15} However, the presence of predisposing factors does not necessarily define vulvovaginal candidiasis, but culture of samples from the vaginal content followed by identification of the micro-organism can be important.^{7,16} Lascar, et al¹⁵ however suggested that since clinical diagnosis has a sensitivity of 85-88% it may be safe and cost effective to restrict vaginal microscopy to a subgroup of women presenting with vaginal discharge, especially for complicated cases as a key to rational selection of antifungal

treatment.^{17,18} Microscopy may still remain valuable because even in asymptomatic cases positive cultures are obtained.¹⁶⁻²¹

MATERIALS AND METHODS

The study was a 3 year retrospective review of high vaginal swabs microscopy, culture and sensitivity in Aminu Kano Teaching Hospital from 1st, July, 2006 to 31st, June, 2009. The case files of the patients who presented with vaginal discharge at the gynaecological clinic during the review period were retrieved. The following data were collated: Age, marital status, high vaginal swabs microscopy, culture and sensitivity reports.

High vaginal swabs samples collected from 859 women who met the above criteria were used. The diagnosis of candidiasis was based on the detection of significant count of *Candida* cells in a freshly collected specimen and viewed under the microscope. Inoculated potato dextrose and Sabourand dextrose agar were incubated at 37°C for 24 hours and the fungal growth was observed microscopically. Where the results were in doubt such results were disregarded. The prevalence of vulvovaginal candidiasis and association with age, marital status and stages of reproduction was determined.

The data obtained were analyzed using SPSS version 14.0 statistical software. Absolute numbers and simple percentages were used to describe categorical variables. Similarly, quantitative variables were described using measures of central tendency (mean, median) and measures of dispersion (range, standard deviation) as appropriate. Statistical significance was determined by Chi-square test and a P value <0.05 was considered significant.

RESULTS A total of 12,399 patients were seen at the gynaecological clinic during the period under review. Out of these 859 patients, making up 7 % presented with vaginal discharge and

were sent for high vaginal swabs microscopy, culture and sensitivity. This gives the prevalence of vaginal discharge of 7 %. However 687 case files of the high vaginal swabs clients were retrieved, giving a file retrieval

rate of 80 %. Of these Negative high vaginal swabs specimens were 500 (72.8 %) and the positive high vaginal swabs specimens were 187 (27.2%) in a sample size of 687 specimens.

Table 1: Microbiological pattern in 187 positive high vaginal swabs specimen.

Organism	Frequency	Percentage
<i>Candida albicans</i>	158	84.5
<i>Streptococcus species</i>	10	5.35
<i>Staphylococcus species</i>	7	3.74
<i>Escherichia coli</i>	7	3.74
<i>Bacterial vaginosis</i>	4	2.14
<i>Proteus vulgaris</i>	1	0.53

Candida albicans was responsible for 158 infections (84.5%), *Streptococci species* 10 (5.35%), *Staphylococci species* 7 (3.74%), *Escherichia coli* 7 (3.74%), *Bacterial vaginosis* 4 (2.14%) and *Proteus vulgaris* 1 (0.53).

Table 2: Distribution of 158 cases of confirmed Vulvovaginal Candidiasis among various Reproductive Age Groups.

Age	Frequency	Percentage
<15	5	3.2
15-45	152	96.2
>45	1	0.6

Those who were <15 years were only 5 (3.2%), those within the reproductive age 15-45 years were in the majority making up 152 (96.2%) and the least was in those >45 1 (0.6%).

Table 3: Relationship between age and marital status with vulvovaginal candidiasis (n= 158)

Age	Married	Unmarried	Total
<15	0	3.2	3.2
15-20	2.1	18.7	20.8
21-25	16.2	13.8	30
26-30	20.8	6.2	27
31-35	7.1	3.9	11
36-40	1.4	2.6	4
>40	0.4	3.6	4
Total	48	52	100

More unmarried women had vulvovaginal candidiasis (52%) compared with the married (48%) and this was statistically significant (p= 0.001). Among the married, vulvovaginal candidiasis was commonest in the 26-30 years age

group (20.8%) and least common in those above 40 years of age (0.4%). In the unmarried group, vulvovaginal candidiasis was commonest in the 15-20 years age group (18.7%) and least common in the 36-40 age group (2.6%). Mean age was 24±5yrs.

DISCUSSION

This review reports a prevalence of vaginal discharge of 7%. Schmidt reported a one year prevalence of vaginal discharge of 3.4%.² It was also observed from this review that most vaginal discharges are of non-infective aetiology and the incidence of positive culture was 27.2%. Ahmed et al reported an incidence of positive culture of 20.47%.²²

Although candida species are reported as common causes of vaginal discharge worldwide,^{1,5} it was commonly reported to be less significant than bacterial vaginosis as a cause of vaginal discharge. In Lagos, Anorlu reported that trichomonas vaginalis caused 74.5% of abnormal vaginal discharge¹¹. Fungal infections of the female genital tract including candidiasis are presently becoming more prevalent.^{23,24} This is because pregnancy, sexual promiscuity, use of drugs and contraceptive pills have been identified to significantly affect the incidence of vulvovaginal candidiasis.²⁵⁻²⁷ These are factors seen commonly in youths and middle-aged people who have a greater burden of vulvovaginal candidiasis as shown by this study and previously confirmed by UNAID.²³

In this study however, it was found that *Candida albicans* was about 40 times

commoner than bacterial vaginosis as a cause of infective vaginal discharge. This represents a changing pattern with a prevalence of 84.5% as against 25%³ previously reported among those with infective vulvovaginitis. This is similar to 81.5% reported by Onifade et al in Ondo State¹³.

As in previous studies^{1,3,4,10}, our study also confirms that vulvovaginal candidiasis is commonest among women in the age group 15-45 years. The reason for this is because of high oestrogen levels in this group of women, use of contraceptives pills and rarely due to sexual activity. Moreover, the vaginal environment in terms of P_H favours its colonization by *Candida* species

This review has shown that marital factor affects the prevalence of vulvovaginal candidiasis. Although Enweani et al¹⁹ reported that marital factor had no effect on the prevalence of vulvovaginal candidiasis, FMOH²⁰ and Okongbowa, et al²⁴ are of the view that marital factor was important. However, contrary to the report of Okongbowa, et al²⁴ that vulvovaginal candidiasis was commoner among the married, in this review vulvovaginal candidiasis was commoner among the unmarried when those <15 years were included.

The report of Ako-Nai et al²⁵ showed that the highest incidence of vulvovaginal candidiasis was among the 20-25 years age group. This is similar to what was observed in this review, where those 20-25 years of age formed 30% of cases of vulvovaginal candidiasis. Okongbowa, et al reported the highest incidence among the 26-30 age group.²⁴ UNAID²³ reported that the highest incidence was in people less than 25 years. Our findings revealed that those less than 25 years of age had the highest incidence only when those who were unmarried were considered. There was a low incidence of vulvovaginal candidiasis among the married group above 41 years while a relatively higher incidence among the unmarried of the same age group. This is similar to the observation of Okongbowa who reported a high incidence in the unmarried aged above 40 years and suggested it could be due to use of contraceptives.²⁴

Candida albicans infection is the commonest cause of pathologic vaginal discharge in Aminu Kano Teaching Hospital, Kano, Nigeria and it is commoner in the unmarried and in those within the reproductive age group.

REFERENCES

1. Abudu OO, Anorlu RI. Vagina discharge. In: Agboola, A. (ed). Textbook of Obstetrics and Gynaecology for Medical Students. second edition. Ibadan: Heinemann Educational Books (Nigeria) Plc. 2006;70-2
2. Schmidt H, Hansen JG, Korsager B. Microbiology of Vaginal Discharge in General Practice. Scand J of Primary Health Care. 1986;4(2):75-80
3. Kwawukume EY, Acquah-Arhin R. Vulvovaginitis. In: Kwawukume EY, Emuveyan EE (eds). Comprehensive Gynaecology in the Tropics. First edition. Dansoman: Asante and Hittscher Printing Press Limited. 2002;72-4
4. Baker PN (ed). Infection in Gynaecology. In: Obstetrics by Ten Teachers. Eighteenth edition. London: Hodder Arnold. 2006;167-9
5. Pirotta M, Fether KA, Bradshaw CS. Bacterial vaginosis-More Questions than Answers. Aust Fam Physician. 2009;38(6):394-7
6. Mirza NB, Nsanse H, D'costa LJ, Piot P. Microbiology of Vaginal Discharge in Nairobi Kenya. Br J Vener Dis. 1983;59(3):186-88
7. Otero L, Palacio V, Carreno F, Mendez FJ, Vazquez F. Vulvovaginal Candidiasis in Nigeria Sex Workers. Int J STD AIDS. 1998;9:526-530
8. Parveen N, Munir AA, Din I, Majeed R. Frequency of Vaginal Candidiasis in Pregnant Women Attending Antenatal Clinic. J Coll Physicians Surg Pak. 2008;18(3):154-7
9. Maccato ML, Kaufman RH. Fungal Vulvovaginitis. Curr Opin Obstet Gynecol. 1991;3(6):849-52

10. Okonofua FE, Ako-Nai KA, Dighitoghi MD. Lower Genital Tract Infection in Infertile Nigeria Women Compared with Controls. *Genitourin Med.* 1995;71(3): 163-8
11. Anorlu RI, Fagbenro Bayioku AF, Fagoroala T, Abudu OO, Galadanci HS. Prevalence of *Trichomonas Vaginalis* in Patients with Vaginal Discharge in Lagos, Nigeria. *Niger Postgrad Med J.* 2001;8(3):183-6
12. Ji F, Zhang N, Di W, Liao QP, Wong W, Zhao XM, Sun Y, Liu ZH. Investigation of the Situation of Vaginal Microflora in Healthy Women Population. *Zhonghua Fu Chan Ke Za Zhi.* 2009;44(1):9-12
13. Onifade AK, Olorunfemi OB. Epidemiology Of Vulvovaginal Candidiasis In Female Patients in Ondo State Government Hospital. *J Food Agric Environ.* 2005;3(1):118-9
14. Andrioli JL, Oliveira GS, Barreto CS, Sousa ZL, Oliveira MC, Cazorla IM, Fontana R. Frequency Of Yeast In Vaginal Fluid Of Women With And Without Clinical Suspicion Of Vulvovaginal Candidiasis. *Rev Bras Ginecol Obstet.* 2009; 31 (6): 300-4
15. Lascar RM, Devakumar H, Jungmann E, Copas A, Arthur G, Mercey D. Is Vaginal Microscopy an Essential Tool for the Management of Women Presenting With Vaginal Discharge? *Int J STD AIDS.* 2008;19(12):859-60
16. Enweani IB, Ogbonna CI, Kozak W. The Incidence of Candidiasis amongst the Asymptomatic Female Students of the University of Jos, Nigeria. *Mycopathologia.* 1987;99(3):133-41
17. Carlsen G. The Candida Yeast Answer. *Candida Wellness Center, Provo, Utah, USA.* 2001; 50.
18. Muotoe-Okafor FA, Gugnani HC, Gugnani A, Okafor G. Antibodies to Antigens of Histoplasma, Blastomyces And Candida In HIV Patients and Carriers In Nigeria. *Mycoses.* 2002;43:173-175
19. Olaleye OD, Ekweozor CC, Li ZL, Opala IE, Sheng Z, Onyemenen TN, Rasheed S. Human T-Cell Hyphotropic Virus Types I And II Infection in Patients With Leukaemia/Lymphoma And in Subjects with Sexually Transmitted, Diseases in Nigeria. *Arch Virol.* 1996; 14:345-355
20. FMOH: Federal Ministry of Health. HIV/Syphilis Sentinel Sero-Prevalence Survey in Nigeria. National AIDS/STD Control Programme. Technical Report. Federal Ministry Of Health, Nigeria. 1999;53
21. White DJ, Stevenson M, Shahmanesh M, Gentle T : Women With Recurrent Vaginal Candidosis Have Normal Peripheral Blood B And T Lymphocyte Subset Levels. *Genitourin Med.* 1997; 73: 475-476.
22. WHO : World Health Organisation. Management Of Patients With Sexually Transmitted Diseases. Study Group Report. Technical Report Series. World Health Organization, Geneva. 1999; 810.
23. UNAID : United Nations Agency For International Development. Briefing Paper. Joint United Nations Programme on HIV/AIDS. 1999; 6.
24. Okungbowa F, Dede A, Isikhuemhen O, Okungbowa M. Effect Of Age And Marital Status On Candidiasis. *Medical Journal Of Islamic Medical Journal .1993;7 Medical Journal of Islamic World Academy of Sciences* 16:2, 67-69, 2006
25. Ako-Nai AK, Kassim OO, Adeniran MO, Taiwo OA : Study Of Urinary Tract Infections At Ile-Ife, Nigeria. *East African.* 1993;70:10-14
26. Weissenbacher TM, Witkin SS, Gingelmaier A, Schoz C, Friese K, Mylonas I. Relationship Between Recurrent Vulvovaginal Candidosis And Immune Mediators In Vaginal Fluid. *Eur J Obstet Gynecol Reprod Biol.* 2009
27. Mardh P, Novikova N, Stukalova E. Colonization Of Extragenital Sites by Candida In Women with Recurrent Vulvovaginal Candidiasis. *Br J Obstet Gynaecol.* 2003; 110(10):934-37