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Prevalence of pathogens of abnormal vaginal discharges in a Nigerian tertiary hospital

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ABSTRACT

Objective: To investigate the prevalence of pathogens of abnormal vaginal discharges and to improve the current syndromic management of abnormal vaginal discharge. **Methods:** A prospective study of pathogens of abnormal vaginal discharge was carried out from December 2007 to December 2008. Samples of female genital swabs were collected from Obstetrics and Gynecology Units of Aminu Kano Teaching Hospital, Kano, Nigeria, and analyzed by microscopy, culture and sensitivity test in Medical Microbiology Laboratory of Aminu Kano Teaching Hospital. **Results:** Microorganisms were detected in 70% (1 400) of a total 2 000 female genital swabs studied. *Candida* species peaked with 42.0% (840), followed by *Gardnerella vaginalis*, a pathogen of bacteria vaginosis with 26.0%. The distribution of abnormal vaginal discharge was highest in young adults aged from 21 to 30 years. **Conclusions:** The commonest Microorganisms of infective vaginal discharge were *Candida* species, followed by *Gardnerella vaginalis*, a pathogen of bacterial vaginosis. Vaginal discharge was prevalent among young adults. We recommend prevention, early diagnosis and prompt treatment of infected female, especially among the young, sexually active group in order to reduce the menace of HIV transmission.

1. Introduction

Infective vaginal discharge is a gynecologic disorder that is characterized by an offensive non-bloody discharge in the female lower genital tracts. It is a common complaint among women of different age groups in any society whether or not they are sexually active. Vaginal discharge may be normal or abnormal[1]. Normal vaginal discharge is physiological, occurring during sexual arousal, pregnancy or at specific period in the menstrual cycle. It is colourless or white, non irritating and odourless or has mild odour and is non infective in nature with no sequelae. On the other hand, infective vaginal discharge may be green, yellow, brown or red in colour with foul smelling odour, pruritus, irritation, dysuria or dyspareunia depending on the type of infection[2].

Microbial agents of abnormal vaginal discharge include, (a) cervix-*Neisseria gonorrhoeae*, *Chlamydia trachomatis*, Group B-streptococcus, *Ureaplasma urealyticum*, Herpes simplex virus; (b) vagina-*Candida albicans*, *Trichomonas vaginalis* and *Gardnerella vaginalis*[2].

Although vaginitis or inflammation of the vagina generally is both treatable and mild, it is a possible risk for acquisition of HIV/AIDS as well as other complications when left untreated[3]. Other complications of vaginal infection include pelvic inflammatory disease, infertility, ectopic pregnancy, pelvic abscess, menstrual disorders, spontaneous abortion and premature birth. It is now well established that the presence of sexually transmitted infections greatly facilitates transmission and acquisition of HIV between sexual partners[4].

Therefore, there is a need for prevention, early diagnosis and prompt treatment of this condition. The purpose of this study was to investigate the prevalence of pathogenic agents of abnormal vaginal discharges and to improve the new syndromic treatment guideline of abnormal vaginal discharges.

2. Materials and methods

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Female genital swabs were collected from December 2007 to December 2008 in Obstetrics and Gynecology Units of Aminu Kano Teaching Hospital ,Kano Nigeria.

Endo-cervical and high vaginal swabs were collected following aseptic precautions[5]. The genital swabs were immediately sent to the genital bench of Medical Microbiology and Parasitology Laboratory, Aminu Kano Teaching Hospital where they were processed according to standard procedures[5]. Infection with *Candida* species was diagnosed by microscopy of a saline mount, Gram-stained smear of material from the vagina and colonial growth on Sabouraud's Dextrose agar. *Trichomonas vaginalis* was diagnosed by microscopy of a saline mount for the actively motile, spear shaped flagellates. *Gardnerella vaginalis*, an agent of bacterial vaginosis, was diagnosed by Whiff test and the evaluation of Gram stained vaginal smear at oil immersion power (×1000) objective for Clue cells, which usually represent at least 20% of vaginal epithelial cells.

Cervical specimens were Gram-stained and cultures were inoculated on plates of Chocolates and Thayer-Martin (Oxoid) media and incubated at 37 ℃ in a moisturized candle extinction jar for 24 to 72 hours. *Neisseria gonorrhoeae* was identified by typical colonial morphology, reactions to Gram-stain, positive Oxidase test, and sugar fermentation. The antibiotic sensitivity of isolates was tested by the agar diffusion method on chocolate agar plates using oxoid multidiscs with standard antibiotic concentrations. The samples collection, transportation and processing including microscopy, culture and biochemical tests were carried out according to recommended standard[5]. The results were analysed using SPSS 11.0 statistical software. Formal ethical clearance was obtained from Aminu Kano Teaching Hospital.

3. Results

A total of 2 000 female genital samples were received. Microbial agents were detected only in 1 400 (70.0%) of the total samples while 600 (30.0%) were undetermined. The samples were arranged according to the age of the patients ranging of 0–60 years. The patients with age range of 0–10 years constituted 20 (1.0%), 11–20 years 440 (22.0%), 21–30 years 780(39.0%), 31–40 years 540(27.0%), 41–50 years 180(9.0%), and 51–60 years 40(2.0%). The peak age bracket at risk was 21–30 years which constituted 780 (39.0%) (Table 1).

Table 1
Distribution of microbial agents of female genital discharge.

Age group in years	Female genital discharge/ percentage	Microbial agents				Undetermined causes
		Candida species	*Gardnerella vaginalis*	*Trichomonas vaginalis*	*Neisseria gonorrhoeae*	
0–10	20	10	–	–	2	8
11–20	440	206	140	–	–	94
21–30	780	360	280	12	8	222
31–40	540	200	100	18	–	120
41–50	180	60	–	–	–	120
51–60	40	4	–	–	–	36
Total	2 000	840	520	30	10	600

Cervical agents were detected in 10 (0.5%), vaginal agents in 1 390 (69.5%) and undetermined agents (no growth, no pathogen isolated) in 600 (30.0%) female genital smears. The aetiologic investigation indicated *Neisseria gonorrhoeae* in 10 (0.5%), *Candidiasis* in 840 (42.0%), *Gardnerella vaginalis* 520 (26.0%), *Trichomonas vaginalis* 30 (1.5%). Out of the total of 840 *candida* species, 360 (42.9%) was detected at age range of 21–30 years. Also, 280 (53.8%) of total 520 cases with bacterial vaginosis and 8 isolates of *Neisseria gonorrhoeae* were found in same age group of 21–30 years (Table 1).

4. Discussion

The present study was set to detect common microbial causes of female genital discharges in Aminu Kano Teaching Hospital, Kano Nigeria, in order to improve the syndromic management tool of vaginal discharges. The microbial agents of female genital discharges were as follows, *Candida* species, *Gardnerella vaginalis*, *Trichomonas vaginalis* and *Neisseria gonorrhoeae* in descending order.

Candidiasis was a leading cause of vaginal discharge in the study with 840 (42.0%) of the total 2 000 female genital samples. The result was similar to some earlier studies which recorded 52.5% and 60.0% respectively[6,7]. Predominance of candidiasis in the study was in the age group of 21–30 years. The age decade of 21–30 years is the most sexually active age group with highest risk of pregnancies, indulgence in family planning pills and immunosuppression due to HIV/AIDS[7]. The inflammation of the vagina, as in any inflammatory STI, increases the risk of acquisition of HIV[8]. Candidiasis is not usually sexually transmitted, though male contacts should be seen, firstly, if they have symptoms, and secondly, if the woman is having recurrences.

Bacterial vaginosis (BV) was the other leading cause of vaginal discharge in the study with 520 (26.0%). A previous study by Ison *et al* recorded 30.0% of BV[9], which is similar to the present study. Predominant finding of BV was in the age range of 21–30 years in the study.

BV is the most common cause of vaginal discharge among young women of child bearing age and has sexual

promiscuity as a risk factor[8]. The rate of acquisition of HIV among women with BV is much higher than in women with normal vaginal flora[8]. There is need for early diagnosis, prompt treatment and prevention of BV, especially in pregnant mothers because of the greater risk of transmission of HIV to the unborn child and serious effects of premature rupture of membrane, prematurity and low birth weight.

Out of the total of 2 000 female genital samples only 30 (1.5%) was due to *Trichomonas vaginalis* and 10 (0.5%) was *Neisseria gonorrhoeae*. A reason for the very low finding of *Neisseria gonorrhoeae* was owed to indiscriminate and wide use of antibiotics[10]. Our community is in a developing country, where antibiotics are easily purchased without prescription both from legal sources like pharmaceutical and chemist stores and illegal sources like free markets and streets hawkers. *Neisseria gonorrhoeae* in particular is very sensitive to antibiotics. Secondly, unlike the male urethra discharge, there is a lot of microbial flora in vaginal discharge that can muddle identification of *Neisseria gonorrhoeae*. Vaginal trichomoniasis has been implicated with an increased risk of transmission of HIV and further complication in pregnancy including premature rupture of membrane, pre-term delivery and low birth weight. Sexual partners of patients with *Trichomonas vaginalis* should always receive treatment, whether or not they are symptomatic[11].

Undetermined agents constitufed 600 (30.0%) in the study, which was similar to other previous studies which recorded 35.0% and 46.2% respectively[7,11]. Inability to resolve the undetermined causes in the study was a limitation. It is possible that a number of women might habour some infections due to *Chlamydia*, *Ureaplasma urealyticum* and other organisms which were not easily detected by our tools. Also some undetected chemicals and physical agents could be contributory to the discharge.

In conclusion, abnormal vaginal discharge was most prevalent in the young sexually active age group with *Candida* species as the commonest agent. We recommend prevention, early diagnosis and prompt treatment of Abnormal Vaginal Discharges in order to curtail the transmission of HIV.

Conflict of interest statement

We declare that we have no conflict of interest.

References

[1]Abebe EA, Olumide M, Oke O. *Syndromic management of STI: Manual for Health workers*. Federal Ministry of Health Abuja: National AIDS and STD Control Programme; 2001.

[2]Omole-Ohonsi A, Mohammed Z, Ihesiulor U. Vaginal discharge in pregnancy in Kano, Nothern Nigeria. *Nig Med Pract* 2006; **50**: 68-71.

[3]Federal Ministry of Health. *Technical report on the 2005 National HIV/Syphilis sentinel survey among pregnant women attending antenatal clinics in Nigeria.* Abuja: Federal Ministry of Health; 2006, p. 1-11.

[4]WHO. *Joint United Nations Programme on HIV/AIDS. AIDS epidemic update.* Geneva: WHO; 2003.

[5]Van Dyck E, Meheus AS, Piot P. *Laboratory diagnosis of sexually transmitted disease*. Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS; 1999.

[6]Nwokedi EE, Anyiam NN. A study of high vaginal swabs in Kano Teaching Hospital:A preliminary report. *Highland Med Res J* 2003; **1**:57-61.

[7]Sobel JD, Faro S, Force RW, Fox B. *Vulvovaginal candidiasis*. Epidemiologic, diagnostic and therapeutic considerations. *Am J Obst Gyn* 1998; **178**: 203-11.

[8]Kenneth OB. STDs/HIV/AIDS -Challenge of next millennium. *Nig J Genitourinary Med* 2003; **18**: 18-30.

[9]Ison CA, Hay PE. Validation of a simplified grading of Gram stained vaginal smears for use in genitourinary medicine clinics. *Sex Transm Inf* 2002; **78**: 413-15.

[10]Jatau ED, Galadima M, Eni RN. Antimicrobial susceptibility of *Neisseria gonorrhoeae* isolated in Kaduna state, Nigeria. *Nig J Genitourinary Med* 2000; **1**: 45.

[11]Cotch MF, Pastorek JGH, Nugent RP. *Trichomonas vaginalis* associated with low birth and pre-term delivery. *Sex Transm Inf* 1997; **74**: 353-60.