



Prevalence of Neisseria Gonorrhoeae and Candida Albicans Among Asymptomatic Pregnant Women Attending Antenatal Clinics in Selected Hospitals

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Pregnant women attending antenatal clinics are usually screened for syphilis and Human Immuno-deficiency Virus (HIV), but rarely for other sexually transmitted infections such as gonorrhoea and vaginal candidiasis in most developing countries. This study aimed at determining the prevalence of *Neisseria gonorrhoeae* and *Candida albicans* among pregnant women of different age groups and stages of pregnancy in selected hospitals in Enugu state. High vaginal swab (HVS) samples were collected from 64 asymptomatic pregnant women between the ages of 18 - 46 years attending antenatal clinic in selected hospitals in Enugu. Samples were cultured as recommended by Center for Disease Control and Prevention. Results indicated that 7.8% of the pregnant women were found to be positive for *N. gonorrhoeae*. The highest prevalence rate was found among subjects of 26 - 35 years (6.2%) and in the third trimester (4.7%). *C. albicans* was found in 9.3% of asymptomatic pregnant women. The highest prevalence rate was 6.2% in subjects of 26 - 35 years and 4.7% in the second trimester. Therefore, there is need for surveillance of both symptomatic and asymptomatic pregnant women for *N. gonorrhoeae* and *C. albicans* in the early stage of pregnancy as a holistic procedure in antenatal clinics.

Keywords: *Neisseria gonorrhoeae*,
Candida albicans, pregnant women

Introduction

Replacement of normal vaginal lactobacilli with anaerobic microorganisms (e.g. *Gardnerella vaginalis*, *Prevotella*, *Peptostreptococcus* and *Bacteroides* spp.) is the main feature of bacterial vaginosis. A definitive causative agent of bacterial vaginosis is not known. Most cases of bacterial vaginosis are asymptomatic, not reported and untreated. It has been linked to many serious gynaecological conditions and obstetrical complications during pregnancy [1,2]. There is evidence associating bacterial vaginosis with the occurrence of *Neisseria gonorrhoeae* [3].

Neisseria gonorrhoeae is a gram negative anaerobe that causes gonorrhoea. It is transmitted through genital and anal sex. It constitutes the second most common sexually transmitted infection worldwide [4]. In 2013, it was observed that 93% of 333,004 cases of gonorrhoea occurred in persons aged 15-44 years in the United States [3].

Candida albicans is the most common cause of vaginal candidiasis. It is common in women whose immune system is weak, especially pregnancy. High oestrogen levels and higher glycogen content in vaginal secretions during pregnancy increases the risk of its development [5]. Lewis [6] reported the common occurrence of *C. albicans* during pregnancy.

In most developing countries, pregnant women attending antenatal care are usually screened for syphilis and HIV, but rarely for other sexually transmitted infections such as gonorrhoea and vaginal candidiasis [7].

Hence, this study aimed at determining the prevalence of *Neisseria gonorrhoeae* and *Candida albicans* among pregnant women of different age groups and stages of pregnancy in selected hospitals in Enugu state.

MATERIALS AND METHODS

Collection of samples

Sixty-four (64) asymptomatic pregnant women between the ages of 18-46 years and attending antenatal clinic in hospitals in Enugu North Local Government Area, Enugu state, were enrolled into this study. The enrolment was based on consent of the subjects. High vaginal swab (HVS) samples were collected from these subjects and placed in Stuart transport medium for transportation to the laboratory.

Analysis of samples

The HVS samples were streaked on chocolate agar and incubated in carbon dioxide atmosphere. Plates were examined after 24-48 hours. Suspected colonies of *Neisseria gonorrhoeae* were identified by gram staining, oxidase, catalase tests and other biochemical tests.

For *C. albicans*, microscopic examination of wet preparations with 0.85% saline and 10% KOH was used for identification. In addition, sample swab sticks were then streaked on Sabouraud Dextrose agar, and germ tube test was also done for identification.

RESULTS AND DISCUSSION

Among the 64 asymptomatic pregnant women tested for *N. gonorrhoeae*, 7.8% tested positive. The age group with the highest prevalence rate was 26-35 years (6.2%), while all samples from 18-25 years tested negative as shown in Table 1. These results differ from that of a similar study in the North eastern part of Nigeria which recorded 17% prevalence rate of *N. gonorrhoeae* among same subject [8]. However, the results concur with the low prevalence rate of 1% reported among 202 pregnant women attending antenatal clinic at Kilifi county hospital, Kenya [7] and 7% rate of bacterial vaginosis recorded among pregnant women in West Africa [9].

Table 1. Frequency of occurrence of isolates among age groups of pregnant women

Isolates	A*	Age group (years)			Total
		18-25	26-35	36-45	
<i>Neisseria gonorrhoeae</i>	64	NIL	4(6.2%)	1(1.6%)	5(7.8%)
<i>Candida albicans</i>	64	NIL	4(6.2%)	2(3.1%)	6(9.3%)

*Number of patients.

Table 2 shows that pregnant women in the third trimester had the highest prevalence rate (4.7%). Gonorrhoea is often asymptomatic in women and is a main cause of cervicitis in women. It can lead to pelvic inflammatory disease (PID), chronic pelvic pain and ectopic pregnancy [10].

Table 2: Frequency of occurrence of isolates among pregnant women of different stages of pregnancy

Isolates	A*	Stage of pregnancy (trimester)			Total
		1 st	2 nd	3 rd	
<i>Neisseria gonorrhoeae</i>	64	NIL	2(3.1%)	3(4.7%)	5(7.8%)
<i>Candida albicans</i>	64	1(1.6%)	3(4.7%)	2(3.1%)	6(9.3%)

*Number of patients.

In the present study, *C. albicans* was found to be 9.3% among asymptomatic pregnant women. It was mostly present (6.2%) in subjects of 26 – 35 years (Table 1), while it was highest (4.7%) in their second trimester (Table 2). This may corroborate with the results of other similar studies if the number of subjects is considered: 12.5% of 1,073 subjects in United Kingdom [11] and 31.5% of 400 subjects in Aba [12]. There is an observation that vaginal acidity and hormonal factors influence the rate of occurrence of candidiasis more in the later trimesters of pregnancy among women [13].

Therefore, there is need for surveillance and education of all pregnant women (both symptomatic and asymptomatic) on *N. gonorrhoeae* and *C. albicans* as a holistic procedure in antenatal clinics.

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