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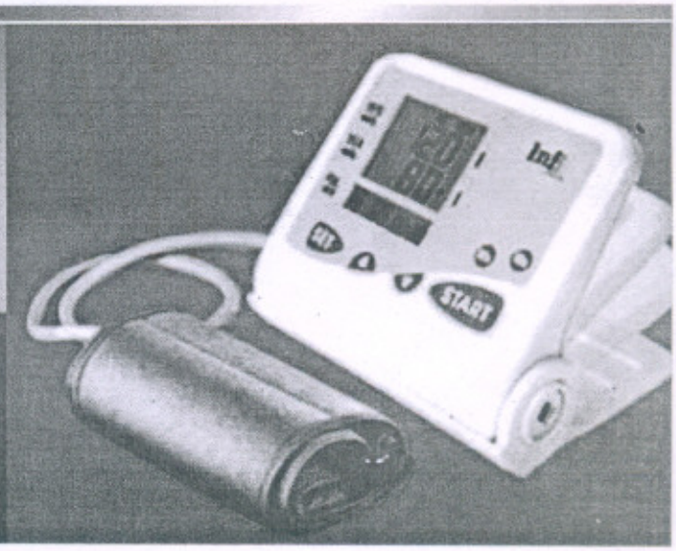

THE PREVALENCE OF BACTERIAL VAGINOSIS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE AT ECWA EVANGEL HOSPITAL, JOS, NIGERIA.

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ABSTRACT

Background: Pregnancy when complicated leads to unfavourable outcome. Bacterial vaginosis is one of the conditions which leads to pregnancy complications such as abortions, preterm delivery and chorioamnionitis

Objective: To determined the prevalence of bacterial vaginosis and associated risk factors among pregnant women seen in the antenatal clinic of the hospital in Jos.

Methods: This was a prospective study in which consented antenatal women were randomly recruited into the study between 1st August and 31st December 1999. These women were carefully interviewed, examined and vaginal specimens taken for evaluation using Amsel's criteria . The data was coded and analyzed using EPI Info version 3.5.1.

Results : The age range was between 15 and 45 years. The mean age was 30 and modal age group was 25-29 years. About 40% (39.6%) of the women presented with vaginal discharge and 60% (60.4%) were asymptomatic. There were 92 out of 250 pregnant women (36.8%) that had three or more of the Amsel's criteria for the diagnosis of bacterial vaginosis. The associated risk factors for developing bacterial vaginosis in the study population that were statistically significant included vaginal douching, new sexual partners and low family income.

Conclusion: BV is a public health problem. It is the commonest cause of vaginal discharge and infective vaginitis in developing countries. Both the asymptomatic and symptomatic forms of bacterial vaginosis were prevalent vaginal conditions among pregnant women.

Key words: Vaginal Discharge, Bacterial Vaginosis, Pregnant Women.

INTRODUCTION

Vaginal discharge is a common presenting complaint in gynaecological clinic and primary care practices.[1,2,3] It is a combination of fluid and cells that is continuously shed through the vagina. Vaginal discharge increases during pregnancy due to the effects of oestrogen and increase blood flow to the reproductive tract[2] Vaginal discharge may be physiological or pathological. Bacterial vaginosis accounts for 50% of all infective vaginitis. Bacterial Vaginosis (BV) is prevalent among both the pregnant and non pregnant women. Approximately 10 - 30% of pregnant women will experience bacterial vaginosis (BV) during their pregnancy.[5,6,7] Bacterial vaginosis is caused by an imbalance in the normal bacteria that exists in a woman's vagina. The vagina is actually an ecosystem containing numerous species of bacteria.[9] In healthy women, those bacteria are primarily lactobacilli. Lactobacilli are called commensals, or useful bacteria, because they make lactic acid and peroxide.[6, 9,10] These byproducts of their normal metabolism help to keep the vagina at a slightly acidic pH of around 4, which protects against infection. Most sexually transmissible disease (STD) bacteria are actually killed at pH 4, as are sperm cells. When a woman has BV, the lactobacilli are replaced by a mix of other bacteria,such as gardnerella, mobiluncus, bacteroides, and mycoplasma.[6,11,12] These bacteria do not produce lactic acid, and so the vaginal pH increases to above 4.5. Bacterial vaginosis is not a sexually transmitted infection, but is associated with having vaginal intercourse. BV may be symptomatic or asymptomatic[4,5,7,10,13] The women at risk of BV are women who douche, smoke, those with a new sex partner or multiple sex partners and those who use IUDs as their primary form of contraception.[5.6.8.9.11.12,13]

Bacterial vaginosis has been associated with significant number of obstetrics and gynaecologic complications such as preterm labour and delivery, preterm premature rupture

of membranes, spontaneous abortion, chorioamnionitis, postpartum endometritis, postpartum caesarean delivery wound infections and subclinical pelvic inflammatory disease.12,13

The objective of the study was to determine the prevalence of bacterial vaginosis and associated risk factors among pregnant women seen in the antenatal clinic in Jos.

METHODOLOGY

Patients and methods

This was a prospective descriptive study carried out between 1st August and 31st December 1999 among pregnant women attending antenatal care at EEH, Jos. Ethical approval for the study was obtained from research and ethical committee of the Hospital.

The clinic has an average attendance of one hundred patients per month. The study was carried out at the time of booking or during the course of the antenatal care if pregnancy was less than 37 completed weeks as determined from the last menstrual period or ultrasound.

The inclusion criteria were healthy pregnant women less than 37 completed weeks of gestation and who had consented.

Those excluded were pregnant women at term, multiple gestation, preterm labour, premature rupture of membrane, cervical incompetence, prior vaginal bleeding or medical complications of pregnancy such as diabetes mellitus, chronic renal disease, pregnancy induced hypertension, cardiac or pulmonary disease.

A sample size of 250 women was chosen to ensure a 95% confidence of estimating a prevalence of bacterial vaginosis in the study population with a 5% margin of sampling error. A simple random sampling method was use to select the 250 women.

These pregnant women were given group health talk and consented women were asked to see the investigator and they gave written informed consent. They were also assessed of the risk factors of bacterial vaginosis such as douching, smoking, new sex partners, multiple sex partners, previous IUCD use, previous history of preterm labour/delivery, previous history premature rupture of membrane and family income.

Enrolled women were screened for bacterial vaginosis using the Amsel's criteria. The Amsel's criteria is based on clinical and microscopic findings. At least three of these criteria must be present for a diagnosis of bacterial vaginosis. These criteria include.

(a) Thin, homogeneous vaginal discharge whose colour and amount may vary from patient to patient.
(b) Presence of clue cells on wet mount. Clue cells are vaginal epithelial cells that have a stippled appearance due to adherent coccobacilli
(b) Amine (fishy) odour when potassium hydroxide solutions added to vaginal secretion (commonly called the "whiff test").
(d) Vaginal pH greater than 4.5.
(e) Absence of the normal vaginal Lactobacilli.

Speculum examination was conducted on each woman in which unlubricated sterile Cusco speculum was inserted to expose the cervix. Sterile swab (Exogen limited) specimens of vaginal discharge were taken from the posterior and lateral vaginal fornices. The colour and odour of the vaginal discharge were noted. The following tests were carried:

(a) pH of vaginal secretion
(b) Amine or whiff Test
(c) Wet Microscopy

The data were coded and entered into Microsoft excel sheet and analyzed using the Epi Info version 3.5.1 (Center for Disease Control and Prevention Atlanta, GA). Differences in proportions were subjected to statistical analysis.

RESULTS

Two hundred and fifty pregnant women attending antenatal clinic at ECWA Evangel Hospital Jos, were recruited for the study. All the women were in the second and third trimesters of pregnancy. The age range was between 15 and 45 years. The mean age was 30 and modal age group was 25-29 years (50%).

Table 1: Shows the Age Distribution of the Women in the Study.

AGE GROUP	N0. OF SUBJECTS	PERCENTAGE
15-19	10	4.0
20-24	61	24.4
25-29	115	46.0
30-34	40	16.0
35-39	18	7.0
40-44	6	2.4
TOTAL	**250**	**100**

Occupational distribution of the patients showed that 98(38.4%) were housewives, 78(31.2%) were civil servants, 46(18.4%) were traders, 19(7.6%) were students and 8(3.2%) were others.

The estimated family income of each woman was carried out. 66% of the pregnant mothers had their family income of more than ten thousand naira (#10, 000). 33% had family income between five to ten thousand naira (#5,000-10,000) and 0.8% had family income less than five thousand (#5,000) naira. There were 84 women with family income less than #10,000 which was considered as low income.

The parity of the women in the study showed that 34% were primigravidae, 26% were primipara and 40% were multipara.

The result also showed that pregnant women usually present for antenatal booking late. 73%of the mothers presented between 20-30 weeks gestation, 18.8% presented between 10-19 weeks gestation and 8.2% presented less than 10 weeks of gestation.

Only 1.6%of the women that had used intra-uterine contraceptive device before the index pregnancy.

Vaginal discharge: 39.6% of the women had vaginal discharge and 60.4% did not have vaginal discharge.

Colour of the vaginal discharge: 90% had whitish vaginal discharge and 10% had yellowish vaginal discharge.

Odour of the vaginal discharge: 52% had malodorous vaginal discharge and 48% were normal discharge.

Vaginal pH: 71.2% had vaginal PH equal to or less than 5 and 28.8 % had PH of greater than 5.5

Amine test: 55.2% had positive amine test and 44.8% had negative amine test.

Clue cells in the vaginal secretions: 46% had clue cells and 54%did not have clue cells in the secretions

There were 92 out of 250 pregnant women (36.8%) that met the Amsel's criteria for the diagnosis of bacterial vaginosis.

Table 2: Shows Women with Bacterial Vaginosis Using Amsel's Creiteria

PARAMETERS PRESENTS	**N0. OF SUBJECTS**	**PERCENTAGE**
1. None Present	51	20.4
2. Only one	64	25.6
3. Two	43	17.2
4. Three	20	8.0
5. Four	62	24.8
6. All five present	10	4.0
Total	250	100

DISCUSSION

Bacterial vagmosis is one of the common genital infections in pregnancy. It accounts for 50% of all cases of vaginitis in all women. *Gardnerella vaginalis is* almost universally present in the vagina of women with bacterial vaginosis, where it is found with anaerobic flora. Bacterial vaginosis is more common in women who wear an intra uterine contraceptive device, women of low socioeconomic status, women with multiple sexual partners, previous low birth weight infants and previous PROM/preterm labour[4,6,8,11]

In this study, the socioeconomic status was assessed by using the occupation of the wife and husband and the estimated family income per month. Ninety-eight out of the 250 subjects representing 38.4% were full time housewives who may not contribute very significantly to the income of the family. Also, 85 out of 250 subjects (33%) have estimated income of less than ten thousand Naira per month. This income is low and means a low socioeconomic status of the women which increases their chances of acquiring bacterial vaginosis.

Only 4 out of the 250 women studied used intrauterine contraceptive device before the present pregnancy, representing 1.6% of the total study population. Two out of the 4 women had bacterial vaginosis as diagnosed by Amsel criteria. The number of intrauterine contraceptive device (IUCD) users in this study was low and not statistically significant.

The previous history of premature rupture of membranes and pattern labour were not very significant in this study since only one women had a history of PROM and 2 had previous preterm labour. Bacterial vaginosis was present in all the subjects with previous PROM and preterm labour but was not statistically significant.

The diagnostic criteria established by Amsel et al, are quite simple and useful in clinical practice. Patients with bacterial vaginosis often complain of a malodorous vaginal discharge, although about 50% to 60% of cases are asymptomatic.[1] In this study, 60.4% of the women were asymptomatic. For those that had history of vaginal discharge, the colour of the discharge was whitish in 90% of cases and yellowish in 10% of cases.

In 1978, Pheifer et al, detected the fishy odour of vaginal discharge when potassium hydroxide (KOH) was added. This test is called the 'whiff test' or amine test. In this study the amine test was positive in 55.2% of women under study. This is similar to the findings by Abudu OO et al, in which the Amine test was positive in 77.3% of cases with positive culture.[4,5] The amine test is also positive with trichomonas infection.

In 1977, Karnaky KJ demonstrated that women with bacterial vaginosis tended to have vaginal PH usually greater than 4.5. In this study 68% of the women with bacterial vaginosis had PH greater than 5.0. This is consistent with the study of Abudu OO et al which showed that 81.8% of cases had PH greater than 5.0 and with positive culture for *Gardnerella vaginalis*. The use of PH greater than 4.5 alone has a sensitivity of 89.3% and specificity of 73.3%. The PH may be greater than 4.5 in situations such as menstrual blood, semen in the vagina, cervical mucus and trichomoniasis.

In 1955, Gardner and Dukes stated that the presence of clue cells was pathognomic of bacterial vaginosis. More recently in 1997, Sobel JD, stated that the presence of clue cells is the single most reliable predictor of bacterial vaginosis.[11] In this study, it was found that clue cells were present in 46% of the subjects who had bacterial vaginosis. This is consistent with the findings by Majeroni BA, Schwebke JR, Hillier SL, Sobel JD, McGregor JA et al. Clue cells are vaginal epithelial cells that have a stippled appearance due to adherent coccobacilli. The edges of the cells are obscured and appear fuzzy compared with the normally sharp edge of vaginal epithelial cells. In the traditional Amsel criteria any clue cell, is significant and this has a sensitivity of 79.8% and specificity of 79.1%. In the modified Amsel's criteria, for clue cells to be significant for bacterial vaginosis, more than 20% of the epithelial cells on the wet mount should be clue cells. This has a sensitivity of 60.1% and specificity of 94.4%. In the present study the traditional Amsel criteria was employed.

The prevalence of bacterial vaginosis among the study population was 37%, being 92 women with bacterial vaginosis from a total of 250 subjects.

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CONFLICT OF INTEREST

The authors declare that we have no personal or financial interest which may have inappropriately influenced us in writing this article.

Author's contribution

The authors are all responsible for the conception, design, data collection and analysis and manuscript writing.

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