Vaginal flora of first time urban family planning attendants in Accra, Ghana

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Summary

Objective: **To determine the vaginal flora of first time urban Family Planning clients at Korle-Bu Teaching Hospital and to assess its implications for the contraceptive choices made.**
Design: **A cross sectional study**
Methods: **A standardized questionnaire surveying the socio-demographic characteristics and the choice of Family Planning method was administered to 100 clients at the Korle Bu Teaching Hospital between March and September 2001. High vaginal and endocervical swabs were also taken during the inspection of the vagina and cervix using a sterile bivalve speculum. The specimens were transported in Amies transport medium to the Microbiology laboratory for processing.**
Results: **The age range of the clients was 19-48 years with a modal age of 28 years. Ninety-six percent of them were married while 86% lived in urban slums. Sixty-three percent were sure of their last menstrual period. Potential pathogens were isolated from culture in 56% of the clients. Organisms causing bacterial vaginosis were the most prevalent in their genital tract. The intrauterine contraceptive device (IUCD) was the most common Family Planning method chosen, followed by the Norplant and the Depo-Provera injections. Potential pathogens were isolated from culture in 50% of those who chose the IUCD.**
Conclusion: **Potential pathogens were isolated from culture in 56% of these first-time clients and organisms causing bacterial vaginosis were the most prevalent in the genital tract. It is suggested that Family Planning clients who screened positive for potential pathogens and opt for the IUCD should be considered for prophylactic antibiotics at insertion.**

Key-words: ***Vaginal flora, Family planning attendants, Ghana.***

Résumé

Objectif: Déterminer la flore vaginale des clientes urbaines de planning familial du Centre Hospitalier Universitaire (CHU) de Korle-Bu faisant pour la première fois le planning familial et évaluer l'implication de cette flore vaginale dans leur choix de contraceptif.
Grandes lignes: Etude transversale
Méthodologie: Entre mars et septembre 2001, cent clientes se présentant pour la première fois au CHU de Korle-Bu pour le planning familial ont été soumises à un questionnaire standardisé. C'etait pour étudier leures caractéristiques socio-démographiques et le choix de leur méthode contraceptive. Pendant l'inspection du vagin, des spécimens vaginaux et endocervicaux ont été prélevés à l'aide d'un speculum bivalve stérile. Les spécimens ont été transportés au laboratoire microbiologique pour être analysés.
Resultats: L'âge moyen ces clientes urbaines était 28 ans avec une gamme de 19 à 48 ans. Quatre-vingts-seize pourcent d'entre elles étaient marieés alors que 86% habitaient dans des taudits urbains. Soixante-trois pourcent étaient sures de leures dernières règles. Des pathogènes potentiels ont été isolés d'une culture chez 56% des clientes. Les organismes qui causent le vaginosis bactérien étaient les plus courants dans leur système genital. Le contraceptif intra-utérin (IUCD) était le plus utilisé, suivi par le Norplant et l'injection de Depo-provera. Des pathogènes potentiels ont été isolés d'une culture chez 50% des clientes qui ont choisi l'IUCD.
Conclusion: Des pathogènes potentiels ont été isolés d'une culture chez 56% de ces clientes et des organismes qui causent le vaginosis bactérien étaient les plus courants. On avait suggéré que les clientes pour planning familial qui ont été positives aux pathogènes potentiels et ont opté pour l'IUCD devraient être considérées pour les antibiotiques prophylactiques à l'insertion.

Introduction

The vaginal micro-flora forms a complicated environment, composed of varying microbiological species in variable quantities and relative proportions.[1] The normal vaginal flora includes over a dozen different organisms, *e.g. Actinomyces israeli, Staph. aureus, Group B Streptococcus, some of which are* potential pathogens. It is further varied by nature's changes over the years from birth to menopause.[2] The quantitative nature of the vaginal flora is a factor in the development of symptoms. Artificial changes occurring as a result of contraceptive measures may also disrupt the resident vaginal flora. Each patient may be her own control, and the balance that leads to an asymptomatic state may vary from individual to individual[3]. An understanding of the normal situation may be the best guide to diagnosing abnormal conditions and directing appropriate therapy.

Bacterial vaginosis is defined as a condition characterised by a depletion of vaginal *Lactobacilli species* accompanied by an overgrowth of a mixed vaginal flora of aerobic, anaerobic and microaerophilic species in very large numbers[3-6] .

A predominance of aerobic *Lactobacillus* species in the vaginal flora is considered normal[7,8]. In women with bacterial vaginosis for example, the prevalence and concentrations of intravaginal *Gardnerella vaginalis*, other anaerobes and aerobes are increased, whereas the prevalence of intravaginal *Lactobacillus* species is decreased[4,7]. These organisms are also recognized as agents of female upper genital tract infection, including pelvic inflammatory disease, adverse pregnancy outcome and urinary tract infection[8].
Gardnerella vaginalis, once thought to be the sole etiologic agent, is probably one of several endogenous members of the vaginal flora that overgrow in women with bacterial vaginosis. Epidemiological studies have revealed that increased sexual activity and intrauterine contraceptive device

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use are risk factors for this condition but symptoms remain unreliable in the diagnosis of bacterial vaginosis as more than one half of all women with bacterial vaginosis have no symptoms[7].

The objective of this study was to determine the vaginal flora of first time urban Family Planning clients at Korle-Bu and to assess its implications for the contraceptive choices made.

Materials and methods

Study population: First time family planning (FP) clients attending the Korle Bu Teaching Hospital Family Planning clinic between March and September 2001 were entered into the study after their verbal consent was obtained.

Exclusion criteria: Clients with overt genital bleeding, significant genital prolapse and symptoms of vaginitis were excluded.

Methods: A standardized questionnaire was administered to the clients by a research assistant after counseling by a family planning Nursing Officer. It surveyed their socio-demographic characteristics as well as the choice of Family Planning method made.

During the inspection of the vagina and cervix with a sterile bivalve vaginal speculum (part of their normal clinical assessment) high vaginal (HVS) and endocervical swabs (ECS) were taken. Specimens were transported in Amies transport medium to the Microbiology laboratory for processing.

Microscopy was done using a Gram-stained smear and a wet saline mount. Gram-stained vaginal smears were assessed for normal flora and the appearance of bacterial vaginosis by the criteria of Spiegel et al[3]. A weighted scoring (0 to 10) of the most reliable morphotypes i.e. *Lactobacillus*, *Gardnerella vaginalis* and curved gram-variable rods was also assessed using the Nugent score[9]. The Whiff test was also carried out using 10% KOH solution to determine the characteristic fishy odour.

All specimens were cultured on the following plates; Thayer Martin medium (TM), Blood Agar (BA) and Sabouraud Dextrose agar (SDA). Plates of SDA were incubated in air at 37°C; other plates were incubated in 5 – 10 % CO_2 in a candle extinction jar at 37°C and examined at 24hr and 48hr.

Isolates were identified by standard techniques.[5,6,10-11]

Results

One hundred first-time Family Planning clients were recruited into the study over the period. The age range was 19 - 48 years with a modal age of 28 years. Ninety-six percent of the clients were married while 86% lived in urban slums. Thirteen of the clients lived in middle class urban areas with one coming from the village.

Sixty-three of the clients were sure of their last menstrual period. The majority of the rest (28 out 37) were nursing mothers, experiencing lactational amenorrhoea.

Table 1 shows the age, gravidity, parity as well as the occupational data. The majority of the clients (84%) were

Table 1 Socio-demographic characteristics

Panel A Age distribution

Age ranges	Numbers (%)
19 and below	1
20 - 24	20
25 - 29	25
30 - 34	27
35 - 39	16
40 and above	11

Panel B Parity distribution

Range of gravidity or parity	Gravidity distribution (No.)	Parity distribution (No.)
0	0	2
1 - 2	23	41
3 - 4	39	42
≥ 5	38	15

Panel C Occupation

Classification of work	Wife (%)	Husband (%)
Unskilled	62	32
Semi-skilled	22	28
Skilled	16	40
Total	100	100

Table 2 Microbiology results

Panel A Culture results

Isolate(s)	Number
Bacterial vaginosis	46
C. albicans	12
Combined BV & C. albicans	10
N. gonorrhoeae	0
Normal flora only	32
Total	100

Panel B Microscopy of wet preparation and grain stain

	Gram stain	Wet preparation
Normal	45	63
Bacterial vaginosis	55	37

Table 3 Family planning method against culture results

Family planning method (FP)	No. of clients choosing FP	BV	Candida	Combined BV/Candida
COC	5	2	1	-
Depo-provera	20	9	2	3
IUCD	44	18	7	4
Norplant	24	14	1	2
Mini-lap sterilisation	2	-	-	-
Spermicide/condom	5	3	1	1
Total	100	46	12	10

Keys
COC - Combined oral contraceptive method
IUCD - Intra-uterine contraceptive device
BV - Bacterial vaginosis

either unskilled or semi-skilled whilst the majority of their spouses (68%) were either skilled (40%) or semi-skilled (28%).

Direct Gram stain, microscopy by wet preparation and culture showed significant concordance in the diagnosis of bacterial vaginosis (BV), i.e. 55% and 56% respectively (Table 2). Out of 55 cases of BV from Gram-stain results, 25, 21, and 9 had Nugent scores of 8, 6, and 4 respectively. Organisms causing BV were the most prevalent in the genital tract of these first-time clients. The biochemical test (Whiff) also identified 52% of the clients as having BV. *Neisseria gonorrhoea* was not isolated from any of them. The IUCD was the most common contraceptive method chosen, followed by the Norplant and intra-muscular Depo-Provera.

Table 3 matches the FP methods chosen against the culture results. Of the 44 clients who chose the IUCD as their preferred FP method, 22 (50%) had bacterial vaginosis while four of the five who chose the spermicide / condom also had bacterial vaginosis.

Discussion

Family Planning clients are normal healthy and essentially asymptomatic women seeking counseling to have control over their reproduction. In this study of the vaginal flora of first - time clients, 56 of the 100 (56%) were positive for potential pathogens on culture. The presence of a few colonies of *C. albicans* alone was considered normal resident flora. *Neisseria gonorrhoea* was not isolated from any of the clients. Full-blown bacterial vaginosis indicated by the presence of clue cells, very few *lactobacilli* and a Nugent score greater than 6 was seen in 46 of the clients. Nugent scoring is a simple method which can be used for the diagnosis of BV in resource poor countries. A study of obstetric and gynaecology patients at the KATH in Kumasi reported a prevalence of 48.7% for BV [12], comparable to our findings.

Another study of postpartum women at the KBTH in 1994, reported that the most common FP method chosen by the clients then was the oral contraceptive pill, followed by the condom, the IUCD and the depo-provera [13]. The choice of the IUCD seems to have gone up in our study.

Bacterial vaginosis, a condition where overgrowth of anaerobes including *G. vaginalis* and aerobic species replace the *lactobacilli* which may cause a pauci - symptomatic disease with watery grey leucorrhoea and a fishy smell[14], has been described as the most common lower genital tract infection encountered among women of reproductive age[15]. Indeed BV-causing organisms were the most prevalent in the flora of these first time Family Planning clients.

The presence of these potential pathogens in the lower genital tract of these asymptomatic FP clients does raise important questions. Should all first time FP clients be offered screening for BV? Should screening be offered only to those clients opting for FP methods that would further increase their risk of developing complications such as PID? Lamont et al[16], have recommended that because of its potential complications, women should be offered screening for BV in a well-woman clinic setting, and should be treated if positive for BV and are symptomatic or if they are at risk of adverse obstetric or gynaecological sequalae. The fact that organisms associated with BV have also been recognized as agents of upper female genital tract infection including PID[3,7,17] does suggest that these clients may be at risk especially those who choose the IUCD[18] or the spermicide[19] for contraception. It may be suggested that asymptomatic first-time FP clients who screen positive for organisms responsible for BV and opt for the IUCD in particular should have prophylactic metronidazole or tinidazole at insertion. A large randomized longitudinal study with long-term follow up should be done to study the necessity of prophylactic treatment in these cases.

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