

PATTERN OF NORMAL VAGINAL FLORA IN HEALTHY MARRIED NON-PREGNANT WOMEN

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ABSTRACT

Objective: To find out the pattern of normal vaginal flora of healthy non-pregnant women.

Study Design: Case series.

Setting & Duration: Sobhraj Maternity Hospital, Karachi from April 2005 to February 2006.

Methodology: A total of 471 married non-pregnant women between the ages 18-50 years who visited the out-patient department were included after taking informed consent. High vaginal swabs were obtained and sent to one particular laboratory for gram stain and culture. Standard techniques of transportation and gram staining were used. Repeat swab and culture was done on a subsequent visit after 7 days, and the two patterns were compared.

Results: Total number of strains seen on high vaginal swabbing was 589 from a total of 471 women; giving rise to 1.25 strains per women. Lactobacillus bacterium was seen in 369(78%) women followed by E-Coli in 77(16%). In premenstrual period, most common vaginal commensal was coagulase negative staphylococci in 41% followed by lactobacilli in 31% of women.

Conclusion: Most common vaginal flora found were lactobacillus species and E-coli. A change in floral pattern of the vagina can be related to the hormonal changes occurring during the menstrual cycle.

KEY WORDS: Vaginal Flora, Vaginal Swab, Lactobacillus Bacterium

INTRODUCTION

The vagina of adolescent and adult women in reproductive age is lined by a layer of stratified squamous epithelium which forms glycogen. Once these cells have been exfoliated, the glycogen is converted into lactic acid by the lactobacilli of Doderline which are normal vaginal inhabitants-maintaining vaginal pH between 3.5-4.5.¹ In addition vagina harbors non- pathogenic vaginal bacterial inhabitants mainly staphylococci and micrococci, gardernella, bacteriodes, bacteria of faecal origin, aerobic streptococci, beta-hemolytic streptococci and

vaginal yeasts, E-coli, Caandidis, Trichomonads.² The normal vaginal or resident flora is complex and easily

includes over a dozen different organisms, many of which are potential pathogens.³ The complex milieu varies by natural change from birth to menopause.⁴ Artificial changes occurring as a result of contraceptive measures may also disrupt the resident vaginal flora.^{2,5} An understanding of the normal vaginal flora is the best guide to diagnose abnormal conditions required for delivering appropriate therapy. Vaginal infections primarily occur when normal vaginal flora is disrupted, since vagina is normally dominated by Lactobacillies supp and its metabolites.⁶ To the best of our knowledge, no local study has been conducted to find out normal vaginal flora in Pakistani women where local perineal hygiene is different from the western world. These differences are because of albution method of perineal washing, climatic conditions, different pattern of sexually transmitted diseases and mostly one partner coital practice. Recognition of the normal vaginal flora is important because all types of vaginitis are superimposed on an existing endogenous microbial flora.

METHODOLOGY

This study was done in Sobhraj Maternity Hospital,

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Karachi from April 2005 to February 2006. A total of 536 married non-pregnant women (accompanied by patients) between the ages 18-50 years (during their post-menstrual period) visiting the out-patient department were initially interviewed for inclusion in the study. Four hundred seventy one gave their consent to be included in the study. They were explained the purpose of the study and the actual procedure of sampling. Women presenting with symptoms like foul smelling discharge, vaginal itching indicating vaginal infection were excluded. Women with history of recent perineal surgery (last six months), vaginal delivery (last six months), use of intra-vaginal medication or pessary within the last 48-72 hours and women with intra-uterine contraceptive devices were also excluded.

High vaginal swabs during post-menstrual period were obtained and sent to one particular laboratory for culture so that there was consistency in analysis. Standard techniques of transportation and gram staining were used. Repeat swab and culture was done on a subsequent visit in pre-menstrual period (women who presented again) and the two patterns were compared.

RESULTS

Total 471 women were included in the study. Total number of bacterial strains isolated was 589 giving an average of 1.25 organism species per women. The highest number of bacterial organisms was lactobacillus species in 369(78%) women followed by E-coli is 77 (16%). In 63(13%) no bacterial growth was obtained (Table I). Only 88 women subsequently presented in OPD during premenstrual period. In these women most common vaginal commensal was coagulase negative staphylococci in 41% followed by lactobacilli in 31% with Enterococci and diptheroid in 19%. Hydrogen peroxide producing lactobacilli were obtained in 255 (69.1%) of and non hydrogen producing lactobacilli was isolated in 114(30.9%) of the women.

DISCUSSION

Both patients and clinicians may incorrectly interpret the symptoms of vulvo-vaginitis and patients often indulge in self medication with over the counter available anti-fungals or home remedies for treatment. Therefore identification of normal vaginal floral pattern keeping in view the hormonal changes due to menstruation has to be studied. In the study by Priestley⁷ intermediate flora was noted on four occasions, and on two of these occasions it progressed to BV. This appeared to occur in the second half of the menstrual cycle, following periods of frequent sexual activity. The appearances of BV correlated with the presence of G vaginalis and

anaerobes on culture.

The vaginal bacteriological profile seen in a study by Torrisi⁸, showed mixed flora (56.7%) followed by Döderlein's bacillus (20%) and G vaginalis (15.5%). This is significantly different from our findings in this study which showed Lactobacilli to be present in highest concentration in 78% of swabs taken. This could probably reflect the cultural difference in sexual orientation of single partner which is in contrast to some western cultures. The loss of Lactobacilli has been shown to be if not one of the factors but certainly a measurable entity in BV. In a study by Aslam⁹ in 2004 it was observed that there was a nearly 30% loss of normal vaginal Lactobacilli in patients suffering from BV. In another study conducted by Tariq¹⁰ on 136 symptomatic patients it was found that normal flora was isolated in 30% of the cases. Similar change in vaginal flora has been reported in studies by Rizvi¹¹ who showed changes in vaginal pH to be a factor in development of BV and other infections including candidiasis and mixed infections. Recently in a double-blind, placebo-controlled

Table I. Organism isolated from vaginal of the non-pregnant healthy subject (n=471)

Procedure	No. of Strains (%)
Grams positive cocci	
Staphylococcus aureus	10(2.1)
Coagulase negative staphylococcus	45(9.5)
Enterococcus faecalis	24(5.1)
Streptococcus group-D	14(3.0)
B-hameolytic streptococci	5(1.0)
Gram Negative Rods	
Escherichia Coil.	77(16.3)
Proteus mirabilis.	4(0.8)
Klebsiella Preumoniae	1(0.2)
Gardnerella vaginalis.	4(0.8)
Diptheroids.	32(6.8)
Pseudomonas.	1(0.2)
Anaerobes	
Candidia	16(3.4)
Mobilincus sp.	6(3.4)
Lactobacillus bacterium	369(78.3)
No growth obtained	63(13.4)

Organism	Pre-menstrual
Staph-Aureus	1(1.2)
Coagulase negative staphylococcus	34(41.4)
Enterofaecalis	7(1.5)
Lactobacilli	26(31.7)
Streptococcus group-D	--
Diphtheroid	7(1.5)
E-Coli	5(6.1)
Candidia	3(3.6)
Gardnerella	--
No growth	5(6.1)

Table II. Organism isolated during the pre-menstrual period (n=88)

clinical trial it was shown that Lactobacillus-containing vaginal tablets can be effectively used in the treatment of symptomatic bacterial vaginosis.¹² In a study by Mumtaz¹³ it was observed that Staphylococcus aureus was the most prevalent vaginal pathogen at 11-60 years and with highest prevalence at 31-40 years. It was a predominant pathogen in both indoor (35%) as well as outdoor (41.6%) patients, followed by enteric gram-negative bacilli and other gram-positive cocci. Luni¹⁴ and co-workers used both Amsel's criteria, vaginal swabs and pH measurement to diagnose and treat BV and concluded that laboratory test should be done to support the diagnosis of BV on clinical grounds. Recently kits (FemPure) have become available for rapid diagnosis of vaginitis by Trichomonas vaginalis, Candida spp., and Gardnerella vaginalis, based on aggregation of latex particles joined to specific antibodies. Its simple implementation without equipment allows its the use in primary health care settings.¹⁶

CONCLUSION

Most common vaginal flora was lactobacillus species and E-coli. In premenstrual phase most frequently isolated organisms was coagulase negative staphylococci followed by lactobacilli. There is a need to strengthen the diagnostic procedure and treatment plan for patient with vulvo-vaginitis. A change in floral pattern of the vagina can be related to the hormonal changes occurring during the menstrual cycle.

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