International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Chandanan A et al. Int J Reprod Contracept Obstet Gynecol. 2024 Feb;13(2):290-293
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20240030

Original Research Article

Observational study of vaginal culture in symptomatic and asymptomatic non pregnant female patient in tertiary care hospital

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Received: 22 December 2023
Revised: 13 January 2024
Accepted: 15 January 2024

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ABSTRACT

Background: Vaginal miroflora plays an important role in maintaining healthy microenvironment. *Lactobacilli* are the dominant flora responsible for this. Any disturbance in balance of normal and abnormal flora leads to different types of vaginal infections like, vulvo-vaginal candidiasis, and bacterial vaginosis. Most common organisms causing vaginitis is *Gardnerella vaginalis* which causes bacterial vaginosis. Other organisms responsible for infections are, candida, trichomonas, and viruses. Abnormal growth of pathogenic bacteria during pregnancy can lead to various adverse pregnancy outcomes.
Methods: This is an observational study conducted in a tertiary care hospital over a period of 6 months (January 2023 to June 2023). Overall, out of 135 women, sample of 120 women were taken and treated accordingly.
Results: Among 120 women, 52 (43.3%) women had no growth on culture, while 20 patients (16.6%) showed growth of *Klebsiella* and 20 (16.6%) patient shows *Candida* and rest shows growth of other pathogen.
Conclusions: In our study, half of the women were found to be with positive culture report, who shown improvement after treatment.

Keywords: *Lactobacilli*, Vaginosis, *Klebsiella*, *Candida*

INTRODUCTION

Lactobacilli is the most dominant micro flora inhealthy, pregnant and reproductive age women.[1,2] Abnormal vaginal micro biomes characterized by a decrease in lactobacilli, and excessive growth of aerobic and anaerobic microorganism. The vaginal micro biome is a dynamic, sensitive microenvironment that changes in response to pregnancy, the menstrual cycle, contraceptive use, and diet.[3,4] The vaginal micro biota lives in a mutualistic relationship with the host, providing protection from pathogenic bacteria in exchange for nutrients and shelter Abnormal vaginal flora growth associated with various adverse pregnancy outcome like preterm labor, preterm pre-labor rupture of membrane, abortions.[5,6]

Role of lactobacilli in preventing vulvo-vaginal infection

Lactobacilli are very well-adapted in vaginal environment and benefit the host by virtue of production of lactic acid as their fermentation by-product, that lowers the pH of vagina to ~3.5. Lactobacilli also generate bacteriocins, that are bactericidal, proteinaceous compounds with a very narrow-spectrum of killing. Hydrogen peroxide, H_2O_2, is another defensive factor produced by *Lactobacillus*.[7] Lactobacilli-enriched vagina, when encountered with any gram-negative attack, imparts a species specific stimulatory effect on our innate immune system by enhancing the production of IL-23, which preferentially activates Th-17 pathway. Factors such as antibiotic use, sexual activity, and hormonal changes can disrupt the

balance of the vaginal microbiota, leading to conditions such as bacterial vaginosis.[8]

Pregnancy and vaginal microenvironment

Vaginal micro biome dynamics is significantly different when ethnicity is considered. For example, Caucasians have decreased variation of the micro biota during the progression of pregnancy.[9] During the pregnancy, elevated estrogen level facilitates *Lactobacillus* to occupy a dominant position in vaginal flora, however, at the same time, the incidence of vulvovaginal candidiasis also turns higher.[10,11]

The secretions from the vaginal vestibular glands increases and the vulva remain in a wet state. This scenario is highly conducive for the growth of *Lactobacillus, Staphylococcus epidermidis, Candida, Enterococcus faecalis, Propionibacillus, Corynebacter*, and *Mycoplasma hominis*.[12-15]

METHODS

This study was conducted in TSM Medical College, Lucknow for the period of 6 months, from January 2023 to June 2023. It was an observational study done in 135 female patients attending gynaecological OPD. Out of 135, 15 patients were lost in follow up.

A complete history, general examination and gynaecological examination were done after proper written informed consent. This procedure was carried out in good light and sterile condition. After emptying the bladder, patients were made to lie down on examination table in lithotomy position. Sterile cusco's speculum inserted into the vagina to see the cervix and vagina then, high vaginal swab taken from posterior fornix with the help of sterile swab stick and sent to microbiology department for culture and sensitivity.

All female participants of age group 21-50 years and given consent for examination were included in study. Pregnant, unmarried female, menstruating women were excluded from the study.

Statistical calculation done by using statistical package for the social sciences (SPSS) software.

RESULTS

Maximum number of patients in our study belong to age group 31 to 40 years (Table 1).

Table 1: Age wise distribution.

Age group	Number	Percentage (%)
21 -30	44	36.66
31-40	52	43.33
41 -50	24	20

Maximum number of patient are of parity 2 (Table 2).

Table 2: Parity wise distribution.

Parity	Number	Percentage (%)
Nullipara	16	13.33
Para 1	20	16.66
Para 2	44	36.66
Para 3	24	20
>Para 3	16	13.33

Most of the patients had lower abdominal pain and urinary complains (Table 3).

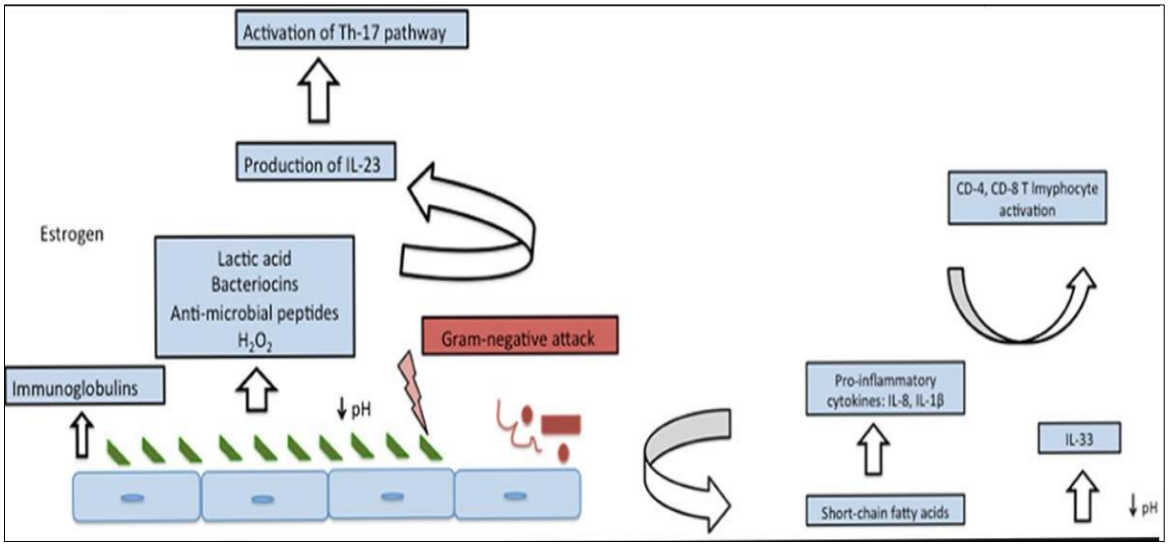

Figure 1: Vaginal homeostasis and microbiome (left panel) and fluctuations after encountering gram-negative attack (right panel).[2]

Table 3: Complain of patient.

Complain of patient	Number	Percentage (%)
Asymptomatic patient with no complain	12	10
Pain in lower abdomen	20	16.66
Discharge per vaginum	16	13.33
Itching over vulval area	12	10
Dyspareunia	8	6.66
Burning micturation or increase frequency or dysuria	20	16.66
Others (menstrual irregularity or multiple complain)	32	26.66

Patient showing no growth or growth of different pathogens (Table 4).

Table 4: Growth of pathogen on vaginal culture.

Growth of pathogen on vaginal culture	Numbers	Percentage
No growth	52	43.33
Escherichia coli	16	13.33
Enterococcus faecalis	16	13.33
Methicillin –resistant *Staphylococcus aureus*	8	6.66
Staphylococcus aureus	8	6.66
Others (*Klebsiella, Candida* etc.)	20	16.66

DISCUSSION

Table 1 shows that most of the patients (43.3%) belong to age group 31 to 40 year.

Table 2 shows that most of the patients (36.66%) visiting to gynecology OPD belong to parity 2. Table 3, shows that most of the patient had come to OPD were asymptomatic or complain of pain abdomen (16.66%), discharge per vaginum (13.33%), and itching over local area (10%).

Bang et al found that although 92% of women had gynaecological problems on examination, only 55% of them were symptomatic.[16]

Table 4, denotes growth of microorganism on vaginal swab culture high vaginal swab for culture and sensitivity, 43.33% shows no growth, 13.33% had shown growth of *E. coli*, 13.33% showed growth of *Enterococcus faecalis*, MRSA in 6.66%, *Staphylococcus aureus* in 6.66%, 16.66% patients shown growth of other pathogen. In this study we observe that high vaginal swab culture positive in 56.66% patient and no growth seen in 43.33% patient. In a study conducted by Orish et al, 40% (1483 out of 3783 high vaginal swabs) high vaginal swabs yielded no growth which is quite close to our study.[17] In the same study conducted by Orish et al, bacteria were identified in 845 samples out of which *E. coli* was present in 29.9% (235 out of 845).[17] In our study 13.33% samples shown growth of *E. coli*. In a study conducted by Dehkordi et al, 65 out of 406 (14.13%) swab samples were positive for *E. coli*.[18] When we treated these patients according to sensitivity report, patients got complete relief of symptoms and repeat culture report came out to be negative.

Therefore, we conclude that instead of giving empirical treatment if we treat according to the sensitivity report, the results are more promising.

Limitations

Limitation of our study as study is of short duration only for 6 months, with limited no. of individuals.

CONCLUSION

In our study, we found that most of the patient belong to reproductive age group and vaginal infections are more common in multiparous. Most patients present with chief complain of pain abdomen (16.6%). On vaginal swab culture, most of patients did not show any growth of microorganism, among the positive cultures, highest growth of *E.coli* and *Enterococcus faecalis* were found.

ACKNOWLEDGEMENTS

Authors would like to thank T. S. Mishra, obstetrics and gynaecology department.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Chandanan A, Arora M, Arora S, Mishra S, Malik A, Kumari N. Observational study of vaginal culture in symptomatic and asymptomatic non pregnant female patient in tertiary care hospital. Int J Reprod Contracept Obstet Gynecol 2024;13:290-3.