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A study of postpartum bacterial vaginal flora

Gynaecology

KEYWORDS: Vaginal Ecosystem, Lactobacilli, Infection

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ABSTRACT

The vaginal ecosystem is a complex system of micro organisms and it interacts with host factors to maintain its equilibrium. It consists of important pathogens besides the normal lactobacilli and doderlein's bacillus. All postpartum patients (especially with perineal tear or episiotomy) do not develop infection because of the vaginal defense system maintained by this ecosystem. Here in this study, 100 postpartum patients were studied by taking sterile vaginal swabs and swabs were examined in the microbiology department. An effort was made to understand the pattern of vaginal flora in different postpartum cases and its relation with infection. Result and conclusion: Lactobacillus gets disturbed in the presence of infection. So it can be inferred that presence of lactobacilli or iatrogenic addiction of lactobacilli may prove useful in the prevention of infection.

INTRODUCTION

The human vagina is a highly versatile organ that can profoundly affect the health of women and their newborn infants. Microbes play a critical role in determining the biochemical and inflammatory profile of the vaginal environment.

Bacterial Vaginal flora is the microorganisms that colonise the vagina. It was discovered by the German gynaecologist Albert Döderlein in 18921. The amount and type of bacteria present in vaginal flora, have significant implications for a woman's overall health. The vaginal ecosystem is a complex system of micro-organisms interacting with host factors to maintain its equilibrium. The endogenous microflora consist of a variety of bacteria, which include aerobic, facultative and obligate anaerobic bacteria like many important pathogens such as Klebsiella, Pseudomonas, Escherichia coli, Staphylococcus, Streptococcus species and besides the normal lactobacilli.These organisms exist in a commensal, synergistic or antagonistic relationship. The Doderlein's bacillus needs special reference among them, as it plays an important roll in maintaining the acidity that characterises the normal vaginal secretions.

The primary colonising bacteria of a healthy individual are of the genus Lactobacillus,[2] such as L. crispatus, and the lactic acid they produce, protects against infection by pathogenic species.[3]

All the postpartum patients with episiotomy or perineal tear do not develop the infection because of vagina has its own natural defence system which prevents against the infections.

An effort is made to understand the pattern of vaginal flora in different postpartum cases and their relation with infection. So that this information can apply to day to day practise and prevent the postpartum infection.

MATERIAL AND METHOD

Study type
Non interventional study
Sample Size
100 post partum patients were subjected for this study.

Method

All the eligible patients were explained about the procedure and their written informed consent was taken.

As per the guidelines by Microbiology department, all samples were collected 48 hours postpartum as follows -

Patients was given dorsal position. No antiseptic solution was used. Sterile gloves were worn, labia was separated with one hand.

Sterile swab stick pre-moisturised with sterile NS held in the other hand and inserted into the vagina taking care that it does not touch the outside skin.

Swab was taken from deeper vagina and swab was stick taken out carefully. The swab stick was kept in its sterile tube, labeled and sent for the culture.

It was examined for microscopic examination in microbiology dept. and reports were given.

According to the reports suggested pathogens in infected patients, treatment was given to the patients.

INCLUSION CRITERIA

All patients, delivering vaginally irrespective of their age, parity and period of gestation, with episiotomy or perineal tear and intact perineum were eligible for the study.

EXCLUSION CRITERIA

Patients showing any signs / symptoms of infection e.g. fever or any other high risk factors e.g. severe anaemia(Hb < 7gm) and HIV positive patients were not eligible.

Patients with PROM, chorioamnionitis were excluded.
Patients referred from outside, which may have undergone repeated PV examinations were excluded.

RESULT

TABLE 1 : Distribution of patients according to age, parity and gestational age

AGE	N(100)
20-24	32
25-29	61
30-34	6
35-40	1
PARITY	
PRIMIGRAVIDAE	48
MULTIGRAVIDAE	52
PERIOD OF GESTATION	
35-37 WKS	4
37-40 WKS	74
40-42 WKS	22

TABLE NO 2 : Distribution of patients according to socioeconomic status

SOCIOECONOMIC STATUS	N(100)
LOWER	59
LOWER MIDDLE	27
UPPER MIDDLE	13
UPPER	1

TABLE NO 3 : Patients with episiotomy and perineal tear

EPISIOTOMY	21
PERINEAL TEAR	12
INTACT PARINEUM	57

TABLE NO 4 : Patients with symptoms

SYMPTOMS	N
FEVER	11
PAIN	9
PURULENT DISCHARGE	5
ALTERED LOCHIA	13
ANEMIA	
SEVERE(<7)	11
MODERATE(8-10)	16
MILD(>10)	23

TABLE NO 5 : Distribution of the patients who developed infection

	NO OF CASES	NO OF CASES WITH INFECTION **(n=17)**
EPISIOTOMY	21	11
PERINEAL TEAR	12	6
INTACT PARINEUM	57	0

Out of 100 patients, only 17 post partum patients developed infection. Out of which 11 patients were with episiotomy and 6 with perineal tear developed wound infection and no patients with intact perineum developed infection.

TABLE NO 5 : Various organisms optioned from specimens from post partum patients

ORGANISMS	NO OF CASES
E.COLI	5
KLEBSIELLA	3
COAGULASE POSITIVE STAPHYLOCOCCI	6
COAGULASE NEGATIVE STAPHYLOCOCCI	4
STREPTOCOCCI	4
PSEUDOMONAS	-
PROTEUS	-
MIXED GROWTH	9
NO GROWTH	83
LACTOBACILUS	
REDUCED	17
NORMAL	83

No specific pathogen was responsible for the infection in all 17 patients but e.coli, staphylococci, streptococci and klebseilla were found commonly. Mixed growth also found in 9 patients.

In all 17 the patients who developed infection had one thing in common, that lower or absent number of lactobacillus. All the patients with intact perineum and patients who has not developed the infection showed good growth of lactobacillus.

DISCUSSION

Total 100 post partum patients were included in this study. 48% cases were primigravida and 52% cases were multigravidae. Mean gestational age was 26.4 wks.(table no 1).

In my study, table 2 showed that most of the patients affected belonged to the lower socio-economic status. This suggests that poor personal hygiene and poor nutrition might play an important role as confounding factors for infection and thus affect the patients. Emphasis must be given on proper hygiene and healthy diet especially during pregnancy.

In this study out of 100, 23 patients developed several symptoms like fever, purulent discharge , altered lochia and pain over suture site on perineum. Out of those 17 patients developed the infection. In rest of the patients symptoms subsided with symptomatic treatment. And the hemoglobin status did not show any significant effect on the result.

Out of 100 patients, only 17 post partum patients developed infection. Out of which 11 patients were with episiotomy and 6 with perineal tear developed wound infection and no patients with intact perineum developed infection.

No specific pathogen was responsible for the infection in all 17 patients but e.coli, staphylococci, streptococci and klebseilla were found commonly. Mixed growth also found in 9 patients. In all the patients with infection one thing was common, that lower or absent number of lactobacillus. All the patients with intact perineum and patients who has not developed the infection showed good growth of lactobacillus.

It does not mean that the causative organisms gain access and cause infection because the absence of lactobacilli. But the infection occurs may be because these causative organisms lead to reduction in the number of lactobacilli.

As literature suggests, "Post partum wound infection is not caused by one specific pathogenic microorganism, but rather by an imbalance of vaginal microbial flora, as well as, possibly,other cofactors. In the presence of vaginitis or other infections, the lactobacilli, which represent the predominant microorganisms in the healthy human vagina, are reduced, absent or lacking specific antimicrobial properties (i.e. production of H2O2).[6,3]Lactobacilli, particularly those producing H2O2, play a pivotal role in controlling the microenvironment of the vagina and in inhibiting the overgrowth of potentially pathogenic organisms.4 Possible mechanisms of this protection include inactivation of pathogens by different Lactobacillus products (lactic acid, H2O2 and bacteriocins), competition for epithelial cell attachment sites and stimulation of the local immune system".[5,6]

To support this results many studies have been done in which patients were given prophylactic lactobacilli and also given as a treatment option in bacterial vaginosis, yeast infection.

P. Mastromarino and colleagues gave Lactobacillus-containing tablet or placebo daily for 7 day to the infected patients and compare the symptoms at 2 weeks follow up. Result was showing that all of the patients in the Lactobacillus-treated group, were free of BV, showing

a normal vaginal flora.[7]

Sonal Pendharkar and colleagues did the study on the patients developed vaginitis and suggested that the treatment with antibiotics or anti-fungal medication in Lactobacillus (L. gasseri and L. rhamnosus) strains provide early cures well as long-term cure against the infection.[8]

Conclusion

As our study suggests that presence of lactobacillus amongst the normal vaginal flora gets disturbed in presence of infection. However, by its nature, lactobacilli are more robust as compare to other organisms. Hence, it may be inferred from this result that presence of lactobacilli can play pivotal role in prevention of infection.

In other words, addition of lactobacilli iatrogenically may prove to be useful in prevention of infection in post partum period. However, this hypothesis needs to be studied by proper large RCTs.

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