THE STUDY OF CERVICAL CULTURES IN ANTEPARTUM PATIENTS WITH SPECIAL REFERENCE TO STREPTOCOCCI AND GONOCOCCI

by

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Introduction

Many bacteriological studies of genital tract have been published since Doderlaien's first comprehensive investigation appeared in 1892. Very little information is available regarding microbial flora of the cervix during pregnancy. Lactobacillus had been regarded as the predominant micro-organism in the vagina.

Many pathogenic, non-pathogenic, aerobic and anaerobic organisms have been isolated from the cervix of the pregnant women. Besides Neisseriae gonorrhoeae, B-haemolytic streptococci are the most potential pathogenic organisms usually isolated from the cervix of the parturients.

The present study was undertaken to compare the rate of colonization of cervix during pregnancy and the effect of colonization on both the patient and the infant.

Material and Methods

Endocervical swabs of pregnant women attending antenatal out patient Department at Lokmanya Tilak Municipal General Hospital, Bombay were collected at random irrespective of gravida and period of gestation. Two endocervical swabs were collected from each patient and were immediately brought to the laboratory. Glucose broth and Thioglycolate broth were innoculated and incubated at 37°C for 24 hours aerobically and anaerobically respectively. After 24 hours of incubation of the broth, Blood agar and McConkey's media were used for the isolation of aerobes. Blood agar with kanamycin was used for the isolation of anaerobes. The direct smears of the swabs were observed and Sabouraud's agar slant was used whenever yeast cells were observed. Chocolate agar plates were used for the isolation of gonococci whenever intracellular gram negative diplococci were observed in the direct smear, and the plates were incubated in the presence of 5-10% Co_2.

Whenever B. haemolytic streptococci were isolated they were grouped by precipitation reaction in agar gel using antigen prepared by Lancefield's acid extraction method.

Throat swabs were collected from newborn babies born of the mothers whose cervical swabs were studied for the normal flora. Throat swabs were cultured on blood agar and were specially look-

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Accepted for publication on 29-1-80.

ed for the growth of B-haemolytic streptococci. In case of patients whose cervical swabs had gonococci, the conjunctival swab of the newborn was studied for the isolation of the same.

Results

Two hundred and fifty endocervical swabs were studied from January to July 1979. Forty-five throat swabs and 2 conjunctival swabs were studied from neonates.

Table I shows the different aerobic organisms isolated. Table II shows organisms isolated. Total 11 strains (i.e. 4.4%) of B-haemolytic streptococci were isolated from the 250 endocervical swabs studied. Out of 11 strains isolated, 8 belonged to group B, 2 to group A and single strain belonged to group C.

TABLE I

Different Aerobic Organisms Isolated from Cervical Swabs of Normal Pregnant Women

Organism Isolated	Number
Staphylococcus Aureus	80
Staphylococcus Albus	64
OC-Haemolytic Streptococci	12
B. Haemolytic Streptococci	11
Non-haemolytic Streptococci	14
Enterococci	18
Diphtheroides	8
Lactobacillus Species	10
Escherechia Coli	20
Klebsiella Pneumoniae	3
Candida Species	27
Neisseria Gonorrhoeae	2

TABLE II

Different Anaerobic Organisms Isolated from Cervical Swabs of Normal Pregnant Women

Organism Isolated	Number
Lactobacillus species	2
Eubacterium species	2
Peptococcus species	10
Peptostreptococci species	12
Bacteroides species	1

Out of total 45 throat swabs studied so far Staphylococcus albus was isolated in 5 instances and OC-haemolytic streptococci was isolated from only 1 of the throat swabs.

Conjunctical swabs from the new born of the patients did not show the colonization of Neisseriae. One of the patients showing Neisseriae gonorrhoeae in the endocervical swab had premature delivery and child died after 4 days. Postmortem was not available.

Discussion

Though cervix is a potent barrier against the upward flow of the normally abundant bacterial flora of the pregnant women's vagina into the upper genital tract, comparison of the species of bacteria isolated from endocervical cultures from normal pregnant and non-pregnant women suggests that bacteria causing infection are indigenous to the genital tract.

White and Knoontz in 1968 studied the flora of cervix during pregnancy and reported many pathogenic and non-pathogenic organisms. William Ledger in 1978 reported the presence of both aerobic and anaerobic organisms in the cervix of the pregnant women. Gorbach *et al* (1973) reported Bacteroides species as the common anaerobic organisms present in the cervix. We in our study found gram +ve cocci as the common anaerobes in the cervix, which is in accordance with the findings of Ohm and Galask (1975).

Besides Neisseriae, B-haemolytic streptococci are the most pathogenic organism isolated from the cervix. White and Knoontz (1968) reported 8 (9.5%) isolation of B-haemolytic streptococci from total 164 antenatal cases. Stotnick isolated 5 (6.3%) B-haemolytic streptococci from 79 antenatal cases, Sokol and Walker in 1973 studied 364 cultures of

uterine cervix from antepartum patients and isolated B-haemolytic streptococci from 11.0% of the patients. We, in this study have isolated 11 (4.4%) B-haemolytic streptococci from total of 250 pregnant women studied. Koshi *et al* in their comparative studies of pregnant and non-pregnant women found no difference in the isolation of B-haemolytic streptococci. They had 13% isolation of B-haemolytic streptoccocci out of which 8% belonged to group B. Though some workers believe that B-haemolytic streptococci are no longer a frequent cause of puerperal infection, inspection of data confirms the suspicion that B-haemolytic streptococci has been identified more frequently than generally reported.

Though we have not found the colonization of B-haemolytic streptococci in the throat of any of the newborns studied we cannot rule out the possibilities of the colonization, as the follow up is done only in few cases. In cases of gonococci, one of the patients had premature delivery. This patient had no symptoms and was attending hospital for antenatal check-up. She delivered before receiving any treatment.

Franciosi *et al* (1973) have found that 4.6% of the swabs were showing B-haemolytic streptococci and 1.2% of their infants had positive throat culture. Baker *et al* (1975) have shown that frequency of colonization among parturients is high, about 25-35% but the attack rate of infection among neonates is low, about 1 to 1.5%.

Our findings agree with White and Knoontz (1968) who demonstrated that inspite of the presenec of potential pathogens in the cervix many healthy women go on to benign post-partum courses. In this condition the amount of trauma and degree of tissue damage is the most critical factor in the development and non-development of post-partum endometritis.

B-haemolytic streptococci are found to cause more than 50% of late onset neonatal meningitis and large proportion of early onset neonatal sepsis and respiratory distress, and neonates most commonly accquire the organism during birth from mothers's perineal microflora.

Conclusion

Though the incidence of colonization was not found as high as it is reported in western countries the consideration of antepartum cervical cultures and prophylactic therapy for pathogenic organisms like B-haemolytic streptococci and gonococci should not be overlooked and the investigations for those organisms should be carried out wherever the facilities are available.

Acknowledgement

We hereby thank Dean, Lokmanya Tilak Medical College for making the clinical material available for this study.

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