

Study Of Vaginal Microflora In Cases Of Preterm Prelabour Rupture Of Membrane (PPROM): A Case Control Study

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ABSTRACT

Background: Globally, Preterm delivery is a major contributory factor for early neonatal death. Till date definite causative factor for preterm labour has not been proven. However, the genital tract infection is considered to be the contributory factors for PPRM. **Method:** This case control study was conducted at Nepalgunj Medical College Teaching Hospital, Kohalpur. 100 cases enrolled in the study were divided into two groups; group A consisted of 50 cases with PPRM; and in group B 50 cases were included cases without PPRM who came to routine antenatal check-up in ANC (antenatal care) clinic. The high vaginal swab was taken from the upper one-third of the posterior wall of the vagina and sent for culture and sensitivity in all cases. **Results:** In group A (with PPRM) 74% of cases were culture positive and the commonest organism was E. coli which was isolated in 40% (20/50). In group B (without PPRM) 28% of cases had culture positive, and again the commonest organism was E. coli isolated in 14 % cases (7/50). This present study showed that E. coli was most sensitive to amoxyclav and staphylococcus epidermis was most sensitive to nitrofurantoin. Ceftriaxone was found to be most effective in mixed infections. **Conclusions:** The genital tract infections in PPRM group was very high (+ve) culture in 74% in comparison to the non PPRM group where genital tract swab showed growth in only 28% (p-value 0.001). The lower genital tract infection has been considered as one of the potent cause of PPRM, so it is advised that a vaginal swab should be routinely obtained in the ANC clinic for culture and sensitivity. An appropriate antibiotic should be started in culture positive cases.

Keywords: Culture sensitivity, High Vaginal Swab, PPRM

INTRODUCTION

Approximately 1.1 million neonates died due to complications related to preterm delivery as estimated in 2010¹. According to the World health organization (WHO), a baby born before 37 completed weeks of gestation. Spontaneous preterm delivery it's a major clinical challenge for the obstetricians. Preterm delivery reported worldwide between 5-13%, even in developed countries, like the United States of America^{2,3}. The worldwide incidence of preterm birth due to PPRM is 3-10% and causative factor responsible for PPRM is vaginal infection i.e. (30-40%). The burden of prematurity and its related morbidity and mortality too high in Asia and Africa, approximately 85 % of preterm birth occurs in this region (31% in Africa and 54% in Asia)⁴. Millennium Development Goal

(MDG) sets targets to reduce 50% of neonatal mortality by 2025. Vaginal infection is one of the risk factors which can be managed some how to prevent preterm pre labour rupture of membrane/ preterm delivery and improvement of maternal and neonatal health can be achieved. The study was carried out, to see the incidence of genital tract pathogens and to obtain the culture and sensitivity of organism so that antibiotics could be prescribed earlier in pregnancy with a view to prevent PPRM know the sensitivity of organism with antibiotics could be prescribed earlier in the prelabour rupture of membrane cases to prevent maternal and neonatal complications.

MATERIAL AND METHODS

This case control study was carried out at dept. of Gynae/Obs of Nepalgunj Medical College Teaching Hospital, Kohalpur between December 2017 to December 2018. A total of 100 cases were enrolled and were divided into two groups, group A and group B. Group A consisted of 50 PPRM cases between 28 to 37 weeks period of pregnancy. The group B consisted of 50 cases attending ANC clinic of Nepalgunj Medical College Teaching Hospital, Kohalpur. They had no PPRM but were in the gestational period between 28 to <37 weeks period of pregnancy. All 100 cases had a vaginal swab done and sent culture and sensitivity.

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The following patients were excluded from study.

1. Immuno-compromised patient.
2. Pregnancy with diabetes.
3. Multiple pregnancies.
4. Pregnant lady under antibiotic (local/systemic).
5. Pregnant lady undergone per vaginal examination.

RESULTS

In the present study 50 cases with PPRM were allocated to group A; and another 50 cases which were normal (non PPRM and who came for routine antenatal check-up in ANC clinic) were allocated in group B. The vaginal swab was taken and sent for culture and sensitivity in both groups.

In group A (PPROM) culture showed Gram positive and Gram negative bacteria in 37 cases (74%). Out of which E. coli was the commonest, 40% (20/50) followed by staphylococcus aureus and staphylococcus epidermis (14% and 10% each). No growth was demonstrated in 13 cases (26%)

In group B (non PPRM) no growth was demonstrated in 36 cases (72%) and 14 cases (28%) showed bacterial growth, in which E. coli was again the commonest 7cases (14%), followed by staphylococcus aureus and staphylococcus epidermis (8% and 4% each). (Tab.I)

Bacterial growth in culture medium	Group(A)	Group (B)	Total	pvalue
E.coli	20(40%)	7(14%)	27	0.001
Klebsiella	2(4%)	0	2	
Staph.aureus	7(14%)	4(8%)	11	
Staph.epidermis	5(10%)	2(4%)	7	
Pseudomonas	2(4%)	0	2	
Proteus	1(2%)	1(2%)	2	
No growth	13(26%)	36(72%)	49	
Total	50	50	100	

Table I: Distribution of microflora in group (A) and group (B)

The sensitivity report showed that E. coli is most sensitive to amoxyclav and staphylococcus epidermis is most sensitive to nitrofurantoin. Ceftriaxone is found to be most effective for mixed infections. (Table II)

Growth within culture media	Antibiotic sensitivity							Total
	Amphicillin	Amoxyclav	Ceftriaxone	Nitrofur antoin	cephalexin	cefadroxil	No growth	
Klebsiella	0	0	9(75%)	0	2(50%)	1(50%)	0	2
Staph.aureus	6(54.5%)	0	3(27.3%)	0	0	2(18.2%)	0	11
Staph.epidermis	1(14.3%)	0	1(14.3%)	3(42.9%)	2(28.6%)	0	0	7
Pseudomonas	0	0	0	0	2(100%)	0	0	2
Proteus	0	0	1(50%)	0	0	1(50%)	0	2
Ecoli	0	13(48.1%)	5(18.5%)	7(25.9%)	0	2(7.4%)	0	27
No growth	0	0	0	0	0	0	49	49
Total	7	13	19	10	6	6	49	100

Table II: Microflora found to be sensitive with Antibiotics

It may be noted that group A (PPROM) showed bacterial growth of vaginal swab in 74% of cases in comparison to group B (non PPRM) where growth was not reported in 72% cases. This was a significant difference with a p-value 0.001.

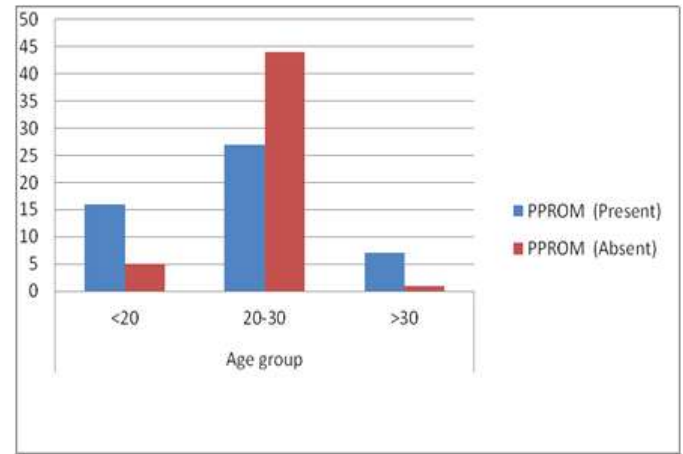


Fig 1: Distribution of cases according to the age group

In this study maximum number of participants belong to age group (20-30).fig (1)

DISCUSSION

The present study consisted of 50 cases (PPROM +ve) designated as group (A) and 50 cases (normal, without PPRM) were designated to group B

In group A 74 % cases were culture positive and in group B 28% cases were culture positive,(p value 0.001) most predominating microflora was E.coli in group A 40% (20/50) and in group B 14 % (7/50), followed by staphylococcus aureus 14% (7/50) in group A and in group B 8%(4/50). Staphylococcus epidermis grew in 10% (5/50) in group A and in group B 4% (2/50) respectively.

Eleje G U et al⁵, reported the bacterial growth in 79.05%cases in PPRM group where as in control group (non PPRM) the vagina swab grew bacteria in 6.67%.

Celen s et al⁶ reported bacterial growth in 30.4% of cases and the incidence of E. Coli was 15.5% followed by klebsiella 4.7%. The control cases (non PPRM) showed a positive bacterial culture only in 14.9% cases.

Singh S et al⁷ reported the growth of bacteria in 74.6% of cases of PPRM. The predominant bacteria were E. coli 29.5% cases.

CONCLUSION

The present study showed that the rate of genital tract infections in PPRM group is very high (74%) as in comparison to the non PPRM group were genital tract swab showed growth in only 28%; p-value 0.001. The lower genital tract infection has been considered as one of the potent cause of

PPROM, so it is advised that a vaginal swab should be routinely obtained in the ANC clinic for culture and sensitivity. An appropriate antibiotic should be started in culture positive cases. In our study ceftriaxone was found most effective for mixed infection.

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