

Study of Maternal and Foetal Morbidity and Mortality in Cases of Prom in Relation to the Elevated C-Reactive Protein

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Abstract

Aims and Objectives: The aims and objectives of this study is to evaluate the maternal and foetal morbidity and mortality in cases of PROM with elevated C-reactive protein. *Material and Methods:* The present study was carried out in the department of Obstetrics and Gynaecology as well as the department of Paediatrics, Katihar Medical College and Hospital, Katihar. A total of 120 cases were selected from Obstetrics OPD and admitted indoor patients of obstetrics ward during the period of October 2012 to September 2014. 100 pregnant women beyond 28 weeks of gestation and with history of leaking per vaginum but not in labour were included in study group. Patients with systemic infection and joint disorder were excluded. Control group included 20 pregnant women beyond 28 weeks of gestation with intact membranes. Proper history, clinical examination and investigations were done in both the groups. *Result:* Incidence of PROM was found to be 3.33%. C-Reactive Protein was significantly raised in 48% cases. Perinatal morbidity was found in 28% babies, out of which 71.4% mothers had raised serum C-Reactive Protein. Perinatal mortality was found in 12% cases in which all had raised serum C-reactive Protein. Puerperal pyrexia was present in 10% cases of which 80% had CRP significantly raised. No maternal mortality occurred. *Conclusion:* It was found that there is significant increase in maternal and foetal morbidity and mortality in cases of PROM where maternal serum C-Reactive Protein level is raised.

Keywords: PROM; C-Reactive Protein; Fetal Morbidity.

Introduction

Pregnancy, childbirth and their consequences are still the leading cause of disease, disability and death amongst women of reproductive age in a developing country like India. Our region i.e. Kosi region, is an underdeveloped area where complications of pregnancy and childbirth are even commoner. Literacy rate is low and people are ignorant about health care.

Human pregnancies are associated with profound inflammatory changes during early phase, resulting in adverse pregnancy outcomes like PROM, Hypertensive disorders of pregnancy, gestational

diabetes mellitus, preterm labour, IUGR, LBW, etc.

Maternal Complications of PROM

Preterm Labour, Chorioamnionitis, Septicemia, Post Partum Endometritis.

Foetal Complications of PROM

Cord Prolapse and Foetal Distress, Prematurity, Hyaline Membrane Disease, Pulmonary Hypoplasia, Intraventricular Haemorrhage, Neonatal Sepsis, IUD

CRP is an acute phase reactant produced by liver in response to the pro-inflammatory cytokines, interleukin (IL-6) and Tumour Necrosis Factor (TNF).

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It has a relatively short half life so CRP level is dependent almost entirely on the rate of hepatic synthesis therefore, it is a sensitive index of systemic inflammation. Estimation of maternal serum C-Reactive Protein can be used for an early and reliable predictor of chorioamnionitis. It is an acute phase reactant, present in traces in plasma of healthy individuals. Serum concentration of CRP rises rapidly to 1000 fold in response to tissue trauma or inflammation triggered by the secretion of interleukin-1 by macrophages and prostaglandins. The normal values of CRP in pregnancy range between 0.7 to 0.9 mg/dl irrespective of gestational age. CRP elevation occurs 2-3 days prior to the development of clinical signs of chorioamnionitis and at least 12 hours earlier than any other investigated parameters.

Aims and Objectives

The aims and objectives of this study is to evaluate the maternal and foetal morbidity and mortality in cases of PROM with elevated C-reactive protein.

Result

Material and Methods

The present study was carried out in the department of Obstetrics and Gynaecology as well as the department of Paediatrics, Katihar Medical College and Hospital, Katihar. A total of 120 cases were selected from Obstetrics OPD and admitted indoor patients of obstetrics ward during the period of October 2012 to September 2014. A total of 120 patients were included in the study. Cases were divided into study and control group. 100 pregnant women beyond 28 weeks of gestation and with history of leaking per vaginam but not in labour were included in study group. Patients with systemic infection and joint disorder were excluded. Control group included 20 pregnant women beyond 28 weeks of gestation with intact membranes to see the CRP level at different gestational period.

A detailed history, clinical examination specially to confirm PROM by sterile speculum examination, pad test, Nitrazine paper test, ultrasonography was done. Determination of maternal serum CRP was done by immunostat CRP kit.

Table 1: Incidence of PROM at KMCH between october 2012 to september 2014

Total No of Labour room admission	Total No of Cases of PROM	Incidence
12065	402	3.33%

Table 2: No. of cases showing significantly raised level of c-reactive protein (N=100)

Groups	CRP level	No of Cases	%
Group A	Significantly raised (> 6mg / L)	48	48%
Group B	Not Significantly raised (<6 mg/L)	52	52%

Table 3: C-Reactive protein and apgar score at 1 and 5 minute apgar score at 1 minute

Apgar Score at 1 minute	Group A (significant CRP)	Group B (non-significant CRP)
0-3	12	2
4-6	18	14
7-10	18	36
Apgar Score at 5 minute	Group A (significant CRP)	Group B (non-significant CRP)
0-3	8	0
4-6	10	6
7-10	30	46

Table 4: C-Reactive protein and perinatal morbidity

Causes	Total no of Cases	Group A	Group B
Asphyxia	16	10	6
RDS	4	2	2
Bronchopneumonia	4	4	0
Septicemia	4	4	0
Total	28	20	8

Table 5: C-reactive protein and perinatal mortality

Causes	Total	Group A	Group B
Still Birth	4	4	0
Septicemia	4	4	0
RDS	2	2	0
Asphyxia	2	2	0
Total	12	12	0

Table 6: C-reactive protein and maternal morbidity

Causes	Total	Group A	Group B
Puerperal Pyrexia	10	8	2
Wound Infection	2	2	0
PPH	6	4	2
Retained Placenta	2	2	0
Total	20	16	4

Table 7: C-reactive protein in normal gestation beyond 28 weeks

Gestational Age (weeks)	Total	CRP Significant	CRP not significant
28-32	5	0	5
33-36	5	0	5
>36	10	0	10
Total	20	0	20

Discussion

Table 1 shows incidence of PROM at KMCH during October 2012 to September 2014 was 3.33% which is within the range of 2-18% as reported by Gunn et al. in 1970. Maxwell (1993) also reported the incidence in between 4-8%.

Analyzing the APGAR score at 1 minute and 5 minute in Table 4, it was found that in CRP significant cases, 62.5% cases had APGAR score below 6 at 1 minute, while in group B only 30.7% cases had APGAR score between 0-6. In group A, only 40% babies showed improvement in APGAR at 5 minutes while in CRP insignificant cases 62.5% cases showed improvement.

Analyzing the Table 6 and 7 the perinatal morbidity was observed in 28 cases, among which 71.42% had CRP levels significantly raised. Infectious morbidity (Septicemia and Bronchopneumonia) was observed in 8 babies, and all of them had maternal serum CRP level significantly raised.

These findings are very much consistent to that of the Anju M, Tribedi et al (1993) who found perinatal morbidity in 22.1% cases of which 6.6% was attributable by sepsis. Total perinatal mortality rate in their study was 11.1% and 40% of it was attributed by septicemia. They observed that C-reactive protein is highly sensitive (100%) in predicting chorioamnionitis.

Regarding maternal mortality in present study, no maternal death occurred in these 100 cases. In very few studies maternal mortality has been found. Webb

(1967) reported 1 maternal death among 5,451 cases of PROM.

Conclusion

Premature rupture of membranes is a great problem for the Obstetrician. Maternal serum C-reactive protein is the most sensitive and early predictor of chorioamnionitis. It is a rapid, inexpensive, simple bedside test (By immunostat CRP kit). Therefore, it should be used as a routine screening test in all cases of PROM for better obstetrical outcome. In this study, we have seen that in patients of PROM with raised C-Reactive Protein have poor maternal and foetal outcome. This poor outcome can be improved by early diagnosis and prompt intervention.

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