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STUDY OF MATERNAL C REACTIVE PROTEIN FOR DETECTION OF HISTOLOGICAL CHORIOAMNIONITIS IN WOMEN WITH PREMATURE RUPTURE OF MEMBRANES

Obstetrics & Gynaecology

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ABSTRACT

Objective: To assess the role of the C- reactive protein (CRP) as a reliable predictor of chorioamnionitis in premature rupture of membranes (PROM). **Methods:** This is a cross sectional study of pregnant women (at least 34 weeks of gestation) admitted for Premature Rupture of Membranes from June 2021 to November 2022. PROM was confirmed clinically by per speculum examination. Histological examination of placenta and fetal membranes was studied. Maternal serum CRP test was done and its role in the early diagnosis of histological chorioamnionitis was studied. **Results:** A total of 130 patients with a mean ± SD age at presentation of 24.4±3.8 years, range (18 to 36 years) were included. The mean±SD gestational age was 35.3±0.8 weeks and per vaginal duration of amniotic fluid leak was 10.4±3.7 days. About one-third of patients 45(34.6%) had fever. The mean±SD amniotic fluid index was 6.2±1.9 cms; 10(7.7%) women had oligohydramnios. About one-fourth of patients 35(26.9%) had a positive CRP level. About 30(23.1%) had presence of histological chorioamnionitis. A total of 30/35 (85.7%) of patients who had a positive CRP showed presence of histological chorioamnionitis. **Conclusions:** CRP has a good application potential for the diagnostic prediction of histological chorioamnionitis in 34-37 gestational weeks pregnant women with PROM.

KEYWORDS

CRP,CAM, Premature rupture of membranes

INTRODUCTION

Preterm delivery is a worldwide public health problem, and it occurs in approximately 6–12% of all pregnancies.1 Preterm prelabor rupture of membranes (PPROM) is defined as amniotic fluid leakage before 37 weeks of gestation, and it represents approximately 30–40% of all preterm deliveries. PPROM is responsible for a substantial proportion of adverse neonatal complications associated with gestational age and risk of infection.2,3

Chorioamnionitis can be considered as an unwanted aftermath of PROM and is capable of causing considerable perinatal morbidity and mortality. It has been a focus of interest in many studies. The ability to predict histological chorioamnionitis is a high priority for Obstetricians managing women with PROM at or after 34 weeks. During the last three decades, CRP is being used in different parts of the world as early predictor of chorioamnionitis. Perinatal mortality after PPROM is most commonly associated with infection and prematurity, which leads to adverse neonatal outcomes as intraventricular hemorrhage, periventricular leukomalacia, cerebral palsy and bronchopulmonary dysplasia.4

METHOD AND MATERIALS

Patients were approached and briefed regarding the study. After explaining the nature of the study, written informed consent was obtained. After enrollment, pregnant patients were interviewed and their relevant clinical history was collected in accordance with the study proforma. A structured questionnaire was furnished to all cases regarding the demographic data, such as age, family history, premorbid conditions, gravida status, last menstrual period were recorded for each patient. This was followed by clinical examination.

The following was carried out

1. Estimation of maternal serum C Reactive Protein (CRP).
2. Gestational age (weeks of gestation at admission)
3. Maternal clinical assessment for chorioamnionitis
4. Antibiotic prescription at admission
5. Type of management (Expectant or Active)

Active management was defined as systematic delivery at admission, regardless of gestational age, infections status and medical history.

Expectant management was defined as any other management, including close monitoring for infection status.

Criteria For Study Enrollment Inclusion Criteria: 1. Pregnant patients aged ≥18 years admitted to labour room for Premature rupture of membranes 2. Pregnant patients who attained at least 34 weeks of gestation

Exclusion Criteria: 1. Multifetal pregnancy 2. Existing clinically proven infection 3. Presence of vaginal infection such as candidiasis and trichomoniasis 4. Gestational or pre-gestational diabetes, gestational hypertension, preeclampsia and signs of fetal hypoxia 5. Presence of gross congenital anomalies including those involving cardiac, renal and pulmonary system 6. Women who received antibiotics before admission 7. Medical conditions such as chronic inflammatory disease, systemic lupus erythematosus, gastroenteric disease such as Crohn's disease, rheumatoid disease, and coronary artery disease where CRP can be positive 8. Refusal of consent

OBSERVATIONS AND RESULTS

There was a significant association seen between CRP with Histological chorioamnionitis; p<0.001.There was a significant association seen between CRP with fever; p<0.001.There was a significant association seen between CRP with tachycardia; p=0.003.

CRP	Histological chorioamnionitis		Fever		Tachycardia	
	Present	Absent	Present	Absent	Present	Absent
Positive	69 (53.1%)	6 (4.6%)	40 (53%)	35 (46%)	44 (58%)	31 (41%)
Negative	1 (0.8%)	54 (41.5%)	05 (0.09%)	50 (90.9%)	18 (32%)	37 (67%)
P value	<0.001		<0.001		0.003	

DISCUSSION

The current study investigated the use of CRP level as a serum marker related to chorioamnionitis and whether CRP levels before delivery could detect chorioamnionitis before occurrence of clinical symptoms. About one-fourth of patients 35(26.9%) had a positive CRP level, while it was negative in the rest of them 95(73.1%). About one-fourth of patients 30(23.1%) had presence of histological chorioamnionitis, while it was absent in the rest of them 100(76.9%). A total of 30/35 (85.7%) of women who had a positive CRP showed presence of histological chorioamnionitis. Our findings were consistent with previously published outcomes regarding clinical chorioamnionitis (CAM) and PPROM. The CRP values evaluated for this analysis were also from the blood sample taken at admission. Chorioamnionitis is a common infection complicating pregnancy. Although it can occur without rupture of membranes in a subclinical presentation, it is more frequently observed during PPROM.7 Substantial fetal, neonatal, and maternal morbidity and mortality— including neonatal sepsis, premature birth, cerebral palsy, and postpartum maternal infection—are associated with CAM. The presence of CAM is a risk factor for PPROM. Finding factors that lead to earlier and more accurate diagnosis of CAM and subclinical cases of infection could prove beneficial by reducing the overall morbidity for the fetus or newborn and mother. Our findings agreed also with Howman et al.

observed a significantly higher maternal inflammatory response when evaluating CRP in women with HCA13.Aggarwal A et al14 performed a prospective study on 50 cases with PPROM and 50 cases of control group without PPROM. All mothers and babies were observed from the time of admission to the time of discharge. CRP appears to be the most sensitive acute phase protein; rising of less than 24 hours makes it suitable to serve as a marker for diagnosing an infective process in early stage.

CONCLUSIONS

The relationship between histological chorioamnionitis and biochemical markers in mothers is incompletely characterized. A total of 130 patients were enrolled in this cross-sectional study. The mean ± standard deviation age of the patients at presentation was 24.4±3.8 years, range (18 to 36 years). The mean±SD per vaginal duration of amniotic fluid leak was 10.4±3.7 days. The mean±SD gestational age was 35.3±0.8 weeks. Most of the women were delivered by caesarean section 73 (56.2%), and most were second gravida 82(63.1%). About one-fourth of patients 35(26.9%) had a positive vaginal swab. About one-third of patients 45(34.6%) had fever. The mean±SD amniotic fluid index was 6.2±1.9 cms; 10(7.7%) women had oligohydramnios. About one-fourth of patients 35(26.9%) had a positive CRP level. About 30(23.1%) had presence of histological chorioamnionitis. A total of 30/35 (85.7%) of patients who had a positive CRP showed presence of histological chorioamnionitis. CRP has a good application potential for the diagnostic prediction of histological chorioamnionitis in 34-37 gestational weeks pregnant women with PROM.

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