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C-REACTIVE PROTEIN IN PATIENTS WITH PREECLAMPSIA

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Abstract:

OBJECTIVE: *To determine the frequency of raised C-reactive protein in patients with preeclampsia.*

PATIENTS AND METHODS: *This descriptive case series study of six months was conducted on Preeclamptic ladies at Liaquat University Hospital Hyderabad. The inclusion criteria were pregnant women, ≥19 years of age, had third trimester of gestation (28-40 weeks), diagnosed as had preeclampsia on the basis of clinical history & examination, systolic blood pressure >140mmHg and diastolic blood pressure >90mmHg and had proteinuria. The relevant preeclamptic ladies were further evaluated for serum C-reactive protein while the data was recorded on pre-designed proforma and analyzed in SPSS 16. The frequency and percentage and mean ±SD was computed for study variables.*

RESULTS: *During six months study period total fifty patients with preeclampsia were evaluated for CRP. The mean ±SD for age (years), gestational age (weeks) and CRP (mg/L) of whole population was 32.77±4.83, 33.76±4.62 and 22.82 ± 6.85. The C-reactive protein was raised in 33 (66%) participants and majority 24 (72.7%) were among 19-29 years of maternal age and 28-29 (weeks) gestational age group 20 (60%).*

CONCLUSION: *Serum CRP levels was high in preeclamptic patients suggesting its role oxidative stress, inflammation and considered as a diagnostic utility.*

Keywords: *Preeclampsia, C-reactive protein and Acute phase protein.*

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INTRODUCTION:

Preeclampsia is a disorder defined as the onset of hypertension (≥140/≥90mmHg) and protein in urine (≥0.3g/24h) after 20 weeks of gestation in previously normal ladies [1]. It is a pregnancy specific syndrome that decreases the organ perfusion secondary to vasospasm and endothelial activation[2]. Women with a prior history of preeclampsia are a risk for developing preeclampsia in subsequent pregnancies[3].Several medical disorders as diabetes mellitus, chronic hypertension, kidney diseases and hypercoagulable conditions are associated with increased preeclampsia risk[4]. Additionally the obstetrical disorders (hydatidiform mole and multifetal gestation) that increases placental mass also increases the risk of preeclampsia[5]. Several hypotheses have been proposed but the causes of preeclampsia still remain unclear[6]. There is also association between placental insufficiency and the etiology of preeclampsia as placental oxidative stress play vital role in the manifestations of preeclampsia[7].There is also increasing evidence that it is a systemic inflammatory disorder as an acute phase response induced by pro-inflammatory cytokines (Interleukin 1 and 6) secreted from the inflamed tissue by parenchymal or inflammatory tissues, this results in the synthesis of acute phase proteins[8-10].

C-reactive protein is a hepatically derived classical acute phase reactant is sensitive indicator of overall inflammatory process within the body[11]. It also increases in infections and malignancy and bind to chromatin and to small nuclear ribo-nucleoprotein particles[12]. It has been proposed CRP may play a role as scavenger and eliciting the inflammatory response characteristics of preeclampsia[13]. Preeclampsia is the main cause of morbidity and mortality worldwide and is a common complication of pregnancy in Pakistan[14]. In preeclampsia, interesting changes are observed in various biochemical parameters like C-reactive protein[15,16]. Studies on these parameters conducted formerly in many countries but still scarce in Pakistan. Therefore this study was conducted on these parameters is essential in patients of patients to display their role in etio-pathogenesis and also the role of biochemical inflmammmatory markers in patients with preeclampsia.

PATIENTS AND METHODS:

This six months study of descriptive nature was conducted at Liaquat University Hospital Hyderabad. The inclusion criteria were pregnant women, ≥19 years of age, had third trimester of gestation (28-40 weeks), diagnosed as had preeclampsia on the basis of clinical history & examination, systolic blood pressure >140mmHg and diastolic blood pressure >90mmHg and had proteinuria while the exclusion criteria patients with patients with history of acute or chronic liver diseases, diabetes mellitus, kidney disorder, malignancy, already on anti-coagulant or corticosteroid or magnesium therapy and non cooperative ladies. After taking informed consent all the relevant ladies were evaluated for serum C-reactive protein while the data was recorded on pre-designed proforma and analyzed in SPSS 16. The frequency and percentage and mean ±SD was computed for study variables.

RESULTS:

Total fifty patients with preeclampsia were evaluated for CRP. The mean ±SD for age (years), gestational age (weeks) and CRP (mg/L) of whole population was 32.77±4.83, 33.76±4.62 and 22.82 ± 6.85. The observations for age, gestational age and CRP are presented in Table 1-3.

Table 01: The Maternal and Gestational Age

		GESTATIONAL AGE (wks)		Total
	Age (yrs)	**28-29**	**30-40**	
	19-29	19	16	35
		65.5%	76.2%	70.0%
	30-40	10	5	15
		34.5%	23.8%	30.0%
Total		29	21	50
		100.0%	100.0%	100.0%

Table 02: The Maternal Age and CRP

		C-REACTIVE PROTEIN		Total
	Age (yrs)	**Raised**	**Normal**	
	19-29	24	11	35
		72.7%	64.7%	70.0%
	30-40	9	6	15
		27.3%	35.3%	30.0%
Total		33	17	50
		100.0%	100.0%	100.0%

Table 03: The Gestational Age and CRP

		C-REACTIVE PROTEIN		Total
GESTATIONAL AGE (wks)		**Raised**	**Normal**	
	28-29	20	9	29
		60.6%	52.9%	58.0%
	30-40	13	8	21
		39.4%	47.1%	42.0%
Total		33	17	50
		100.0%	100.0%	100.0%

DISCUSSION:

The present study was conducted to assess clinical utility for biochemical markers like CRP which is not expensive is a major tool to diagnose and to predict prognosis of various systemic disorders. In present series CRP was raised in preeclamptic women 33 (66%); there was observed correlation between preeclampsia and CRP. Lohsoonthorn V, et al[17], observed that CRP was elevated in ladies with preeclampsia and can be used to predict the preterm delivery in ladies with elevated CRP. Sacks GP et al study observed maternal inflammatory event during fifth week of gestation in relation to raised CRP levels[18]. The CRP can be a marker for inflammatory process in various systemic disorders. The study by Mohammadi B et al also shown association between CRP levels and occurrence of preeclampsia[19]. CRP was also elevated as a inflammatory biomarkerin preeclampsia in the study by Stefenovic M, et al[20]. Other causes for raised CRP were inflammation, trauma, infections, obesity, smoking and hormonal therapy, cardiovascular disorders and metabolic syndrome. Thus CRP considered as a supportive diagnostic tool in preeclampsia along with conventional markers. Further studies advanced studies are needed on the utility of this marker for the diagnostic assessment of preeclampsia.

CONCLUSION:

Serum CRP levels was high in preeclamptic patients thus suggesting its role in oxidative stress, inflammation and having diagnostic capability.

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