

ORIGINAL ARTICLE

## Study of Changes in Levels of Serum Hs-Crp in Preeclampsia Patients

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### ABSTRACT

**BACKGROUND:** Preeclampsia is a disorder of widespread vascular endothelial malfunction and vasospasm, which occurs after gestational age of 20 weeks and can present as late as 4-6 weeks postpartum. **OBJECTIVE:** Objective is to compare changes in level of S.Hs-CRP levels in patients of preeclampsia & normal pregnant women. **METHODOLOGY:** There were 50 preeclampsia patients and 50 normal pregnant women in the same age group (20-45 years) included in this study. Serum Hs-CRP (by turbidimetric immunoassay) was measured on fully auto analyzer among the cases and control groups. **RESULTS:** Serum Hs-CRP levels were significantly higher in preeclampsia patients ( $3.70 \pm 1.58$  mg/l) as compared to normal pregnant women ( $1.35 \pm 0.63$ mg/l) (p value<0.001). **CONCLUSION:** Hs-CRP is significantly increased in preeclampsia patients and can be used as a predictive factor for preeclampsia.

**Key words:** Hs-CRP, preeclampsia.

### INTRODUCTION

Preeclampsia is a disorder of widespread vascular endothelial malfunction and vasospasm, which occurs after gestational age of 20 weeks and can present as late as 4-6 weeks postpartum. Preeclampsia is defined as a blood pressure of at least 140/90 mmHg measured on two occasions each 6 h apart, accompanied by proteinuria of at least 300 mg per 24 h, or at least 1+ on dipstick testing. It is clinically defined by hypertension and proteinuria, with or without pathological edema.<sup>1</sup> Preeclampsia is a disease of pregnancy associated with endothelial cell damage. There is an increasing evidences that preeclampsia is a

systemic inflammatory disease. Activation of haemostatic system and endothelial activation are the key components of systemic inflammatory response. The hs-CRP is a sensitive marker of tissue damage and inflammation. Its production is stimulated by inflammatory cytokines, Interleukin-6 and  $\alpha$ - Tumor Necrosis Factor.<sup>2</sup>

The hs-CRP plays important role in eliciting the inflammatory processes.<sup>3</sup> It acts as a scavenger and responsible for clearance of membranes and nuclear antigens.<sup>4</sup>

### MATERIALS AND METHODS

Study was conducted at civil hospital, Ahmadabad during January 2016 to July 2016. 30 preeclampsia patients and 30 normal pregnant women were included in the study after their consent.

Samples were collected at the time of admission in plain vacutte and serum was separated. Serum was processed on Erba XI-640 fully automatic biochemistry analyzer with Hs-CRP reagent kit which works on principle of turbidimetric immunoassay.

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### ❖ Inclusion Criteria for Group 1(Cases)

- Age:- Between 20 – 45 years
- Women are pregnant.
- Single/ multiple pregnancy
- Preeclampsia sign & symptoms
- Agree to comply with study

### ❖ Inclusion Criteria for Group 2(Controls)

- Age: - Between 20 – 45 years
- Women are pregnant.
- Single/ multiple pregnancy
- Pregnant women without any complication
- Agree to comply with study

### ❖ Exclusion criteria for both Groups

- Age < 20 years or > 45 years
- Women with Diabetes mellitus
- Chronic Hypertension
- Pre-existing renal or liver disorder
- H/O thromboembolism
- Repeated miscarriage
- H/O abruption placenta ,anaemia
- Preterm labour
- H/O smoking

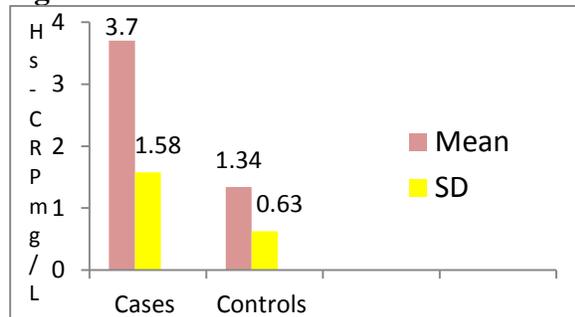
## RESULTS

Serum Hs-CRP level shows significant decrease in study group as compare to normal healthy control group ( $p < 0.001$ ).

**Table 1:**

| Subjects | Mean(S. Hs-CRP in mg/L) | SD   | significance  |
|----------|-------------------------|------|---|
| Cases    | 3.70                    | 1.58 | P<0.001*,<br>t-7.7,df-58<br>*<br>P<0.05-significant,<br>p<0.01-highly significant |
| Controls | 1.34                    | 0.63 |   |

**Figure 1:**



## DISCUSSION

In present study there is increase in hs CRP levels in women with high risk pregnancies are significantly more than that of controls correlates with study done by Myles Wolf et

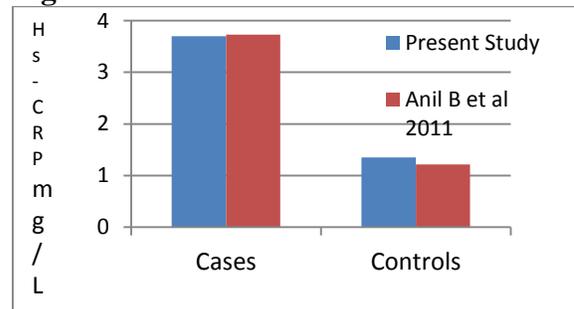
al, in Boston showed that high resolution CRP assays were performed on first trimester serum samples in women who developed pre-eclampsia.<sup>5</sup>

Compared with women who had normal pregnancy, the first trimester C reactive protein levels were significantly higher among women in whom pre-eclampsia developed. The findings of Anil B et al. is consistent with our study.<sup>6</sup>

**Table 2:**

|                                | Case        | Control       | P value |
|--------------------------------|-------------|---------------|---------|
| Present Study                  | 3.702±1.58  | 1.348±0.73    | <0.001  |
| Anil B et al 2011 <sup>6</sup> | 3.733±1.096 | 1.216 ± 0.552 | <0.001  |

**Figure 2:**



- Preeclampsia is a complex condition, which cannot be attributed by any single cause. The primary cause to develop a disease may be due to insufficient invasion by trophoblast cells in uterine wall in early pregnancy.

- There is no unifying scientific evidence to explain the pathophysiology of disease. But, a possible hypothesis for its pathogenesis is reduced placental perfusion as a result of shallow invasion this leads to increased lipid peroxidation and the release of oxygen radicals without counter regulation by antioxidants.

- In addition to this activation of neutrophils and macrophages, this promotes cytokine production and further leads to maternal endothelial dysfunction<sup>7</sup>

## CONCLUSION

This present study indicates that High Sensitive C - reactive protein can be used as a predictive factor for pre-eclampsia.

We also suggest to take larger sample size for further studies.

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