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**EVALUATION OF RFTS, LFTS AND ASCORBIC ACID IN PRE-ECLAMPSIA
AMONG WOMEN OF INDORE**

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ABSTRACT

The present study was designed to evaluate Renal and Liver function tests in preeclampsia. Total 70 pregnant women subjects in age group of 18 to 30 years were taken for study, among them 35 normal pregnant women were taken as control and 35 pregnant women with preeclampsia were taken as case group. Fasting blood samples were collected from each subject and analyzed for RFTs and LFTs. Results showed significant increase ($p < 0.05$ & $p < 0.001$) in urea, uric acid, creatinine, SGOT, SGPT, alkaline phosphatase levels and significant decrease in serum ascorbic acid levels of case group when compared to control. Study concludes that high blood pressure in preeclampsia affects the renal and liver related biochemical parameters.

Key Words: *Preeclampsia, Vascularization, Endothelial Dysfunction, Morbidity, Mortality*

INTRODUCTION

Preeclampsia is a pregnancy specific hypertensive syndrome that causes substantial maternal and fetal morbidity and mortality (Venkatesha 2006). Maternal endothelial dysfunction mediated by excess placenta-derived soluble VEGF receptor -1 is emerging as prominent component in disease pathogenesis (Magnussen 2007, Dunne 1991). Severe pre eclampsia include the HELLP (haemolysis, elevated liver enzyme, low platelets) syndrome and increased oxidative stress in preeclampsia occurs in about 5-8% of pregnancies (Misra 1972) and its diagnosis is currently made by clinical criteria; accordingly the exact etiology remains to be determined, although it is likely to be multifactorial. Preeclampsia occurs during second and third trimester of pregnancy (Kalz 1982, Mehta 1993). It is characterized by BP 140/90 mmHg or rise in systolic blood pressure (SBP) more than 30 mmHg and diastolic blood pressure (DBP) more than 15 mmHg after 21 weeks of gestation (Mehta 1993). Preeclampsia is known to affect functions of various organs and their metabolism. In this context the present study has been under taken to compare the changes in renal function tests and liver function tests in normal pregnancy and pre-eclampsia (Vokes 1988, Cummingham 2005).

MATERIALS AND METHODS

The present study was conducted in the department of biochemistry M.G.M medical college Indore M.P. The study comprises total 70 pregnant subjects aged between 18-30 years among them 35 normal pregnant women were taken as control and 35 pregnant women with pre eclampsia were taken as case group, all cases were primi gravida and having more than 29 weeks of gestation.

Exclusion criteria: The cases and controls having past history of diabetes hypertension, renal diseases, liver disorders, multiple pregnancies, gestational diabetes, over weight and obese.

Complete history and examination findings of both cases and controls were noted. Fasting blood samples were collected and serum was analyzed for following parameters urea, creatinine, uric acid, Total protein, Albumin, Bilirubin, SGOT, SGPT, Alkaline phosphatase by enzymatic method using A-15 biosystems biochemistry analyzer and serum ascorbic acid is estimated by method proposed by (Nino and

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shaw1987). The data was analyzed for statistical significance using one way ANOVA followed by student t-test and $p < 0.05$ was considered as the level of significance.

RESULTS

Table -1 status of RFTs in control and case group

Parameters	Control n=35	Cases n=35
Urea mg/dl	19±4.5	36±8.1*
Creatinine mg/dl	0.82±0.12	1.6±0.08*
Uric acid mg/dl	3.5±0.78	4.8±0.92*
Glucose mg/dl	98±28.2	102±31.4

Note ; * = $p < 0.05$ and ** = $p < 0.001$

Table -2 status of LFTs in control and case group

Parameters	Control n=35	Cases n=35
Total protein g/dl	7.2± 1.1	7.8 ± 2.1
Albumin g/dl	4.2 ± 0.92	4.0 ± 0.9
Bilirubine g/dl	0.98 ± 0.04	1.2 ± 0.02
SGOT u/l	32 ±10.2	72± 22.2**
SGPT u/l	28 ± 9.6	69± 19.1**
Alkaline phasphatase u/l	24± 8.4	74± 16.2**

Note ; * = $p < 0.05$ and ** = $p < 0.001$

Table-3 status of serum ascorbic acid level in control and case group

Parameters	Control n = 35	Cases n= 35
Serum ascorbic acid(mg/dl)	1.02±0.18	0.74±0.20**
Reduced ascorbic acid(mg/dl)	0.97±0.09	0.62±0.18**

Note; ** = $p < 0.001$

Status of renal parameters of cases and controls is shown in table-1 pregnant women with preeclampsia had significantly higher ($p < 0.05$) serum urea, creatinine and uric acid levels when compared with control group. Status of LFTs of cases and controls are projected in table -2 which shows significant rise ($p < 0.001$) in liver enzymes SGOT, SGPT and alkaline phasphatase levels in preeclampsia (case group) when compared to control. Table 3 shows status of ascorbic acid of cases and controls results shows significant decrease ($p < 0.001$) in ascorbic acid when compared to control.

DISCUSSION

The pathophysiology of pre-eclampsia is poorly understood. The most common factor associated with preeclampsia is placental vasculopathy (Magnussen E.B. 2007). The mechanisms driving the abnormal elevation of liver enzyme SGOT, SGPT, Alkaline phasphatase leading to pre eclampsia are unclear. In pre eclampsia hypervascularization, and vasoconstriction of liver leads to liver cell injury and alteration of cell membrane permeability and damage to the cells which allows intracellular enzyme to leak in to the blood, leads to elevated liver enzymes (Kokia E1990, Madazilla 1990) like SGOT, SGPT, Alkaline phasphatase. Elevated liver enzyme may cause increase in urea, uric acid. Another cause may be

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hypervascularization and vasoconstriction in preeclampsia causes alteration in renal tubular cell permeability and problem in filtration and re absorption which results in to elevated urea and creatinine .various studies concluded that glomerular filtration is affected by various factors like renal blood flow, glomerular capillary hydrostatic pressure, systemic blood pressure ,arteriolar vasoconstriction ,glomerular permeability and all these factors are associated with high blood pressure as in preeclampsia(Parretti E 2006,Aagaard T 2006).Most probably these are the cause of slight increase in urea and creatinine . Increased oxidative stress in pre-eclampsia leads to increase utilization of antioxidant vitamin which results into decrease level of ascorbic acid(Rivers J 1975,Rumbold A 2006).there has been growing excitement that anti oxidant could be the key to reducing the incidence of pre-eclampsia. Endothelial disfunction is critical to the evolution of pre-eclampsia and oxidative stress may be the major contributor. Although anti oxidant capacity is reduced in preeclamptic women, the use of anti oxidant such as vitamin-C and E to prevent preeclampsia have been conflicting. Present study suggest that serum liver enzyme ,ascorbic acid and urea appears to be of immense value in understanding the pathogenesis and also appears to be an important contributing factor of pre eclampsia .

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