

# Evaluation of Oxidative Stress and Urinary Calcium Creatinine Ratio in Pregnancy Induced Hypertension

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## Abstract

The present study has been undertaken to evaluate oxidative stress and urinary calcium creatinine ratio in pregnancy induced hypertension. Study was carried out in M.Y. hospital and M.G.M. medical college during 2012 to 2013. Study comprised 250 subjects 125 normal pregnant women without any complications were taken as control and 125 pregnant women with PIH were taken study cases. Normal Gynaecological examination history based informations were taken from each subject. Fasting blood sample and morning urine samples were collected from each subject and blood samples were analyzed for free radical estimations and urine sample analyzed for calcium and creatinine. Our study shows a significant change in free radical level and significant fall in urine calcium creatinine ratio as compared to control study concluded that PIH can be result of increased oxidative stress. In this condition change in urinary calcium creatinine ratio indicate its relation to renal system. Study conclude that by improving oxidative stress with proper antioxidant diet or therapy we can decrease or minimize the risk associated with PIH.

**Index terms**— pre-eclampsia, urinary calcium, urinary creatinine, pregnancy induced hypertension.

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## 2 Introduction

regnancy induced hypertension (PIH) still continues to be one of the most common complication of pregnancy 1,2,3 ,. Despite of so much research and changes in management it is still a leading cause of maternal morbidity and mortality 4,5,6 .

Though the exact cause of PIH is unknown. A number of modalities of treatment are being tried to decrease the progress of PIH 7,8,9 . In pregnancy induced hypertension endothelial cell dysfunction is a key event and this endothelial cell dysfunction may be associated with oxidative stress and addition to that calcium and creatinine ratio is as important aspect of maternal and fetal physiology during gestation so in order to evaluate oxidative stress and urinary calcium creatinine ratio in pregnancy induced hypertension was planned.

### 3 II.

## 4 Material and Methods

The study was conducted on total 250 patients who have been admitted in the Department of Obstetrics and Gynecology MGM Medical College and associate MY hospital Indore from July 2012 to may 2013. 125 normal pregnant women were taken as control and 125 pregnancy induced hypertensive women taken as study cases. A detailed history about age, residence, literacy, occupation etc. was noted with general physical and obstetric examination. Blood samples and spot urine were collected from each subject. Blood samples were analyzed for free radicals levels by Thiobarbituric acid reactive substance estimation urine samples were analyzed for calcium and creatinine levels by fully automated biochemistry analyzer.

## 5 Table 1 : Comparison of urinary calcium to creatinine ratio between normotensive pregnant women and PIH patients

### 6 Parameters

Control n=125

### 7 PIH cases n=125 p value

Urinary calcium/creatinine ratio  $0.0618 \pm 0.0084$   $0.0370 \pm 0.0064$   $<0.001$

## 8 Results

The result of this study presented in the table-1 and table-2. The significant decrease in urinary calcium IV.

## 9 Discussion

Pregnancy induced hypertension is a multifaceted syndrome with involvement of several important organs 10,11 . PIH is also associated with endothelial dysfunction 12,13,14 . Our study revealed that there was significant increase in MDA levels was observed there is reasonable evidence to suggest that circulating neutrophils of patient with preeclampsia release an excess of reactive oxygen species 15,16,17 , present study revealed decrease calcium creatinine ratio observed in PIH women. Different studies concluded that calcium homoeostasis is an important aspect of maternal and fetal physiology during gestation 18,19,20, ??1 . A certain calcium level is required for production of endothelial derived releasing factor which maintains vasodilation in normal pregnancy. Alteration of calcium metabolism has been implicated in pathogenesis of hypertension during pregnancy. Study concluded that the pregnancy induced hypertension is associated with increased oxidative stress and disturb calcium creatinine ratio so addition antioxidant in treatment of PIH we can minimize the risk associated with PIH.

### 2

Parameter	Control n=125	PIH cases n=125	p value
Plasma MDA Nmol/ml	$2.8 \pm 0.48$	$5.2 \pm 0.92$	$<0.001$

III.

Figure 1: Table 2 :

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