

1 Evaluation of Oxidative Stress and Urinary Calcium Creatinine 2 Ratio in Pregnancy Induced Hypertension

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7 **Abstract**

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

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

23 **1 Evaluation of Oxidative Stress and Urinary Calcium Creati- 24 nine Ratio in Pregnancy Induced Hypertension**

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37 PIH.

38 **2 Introduction**

39 pregnancy induced hypertension (PIH) still continues to be one of the most common complication of pregnancy
40 1,2,3 ., Despite of so much research and changes in management it is still a leading cause of maternal morbidity
41 and mortality 4,5,6 .

9 DISCUSSION

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

47 3 II.

48 4 Material and Methods

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

56 5 Table 1 : Comparison of urinary calcium to creatinine ratio 57 between normotensive pregnant women and PIH patients

58 6 Parameters

59 Control n=125

60 7 PIH cases n=125 p value

61 Urinary calcium/creatinine ratio 0.0618 ± 0.0084 0.0370 ± 0.0064 <0.001

62 8 Results

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

64 9 Discussion

65 Pregnancy induced hypertension is a multifaceted syndrome with involvement of several important organs 10,11
66 . PIH is also associated with endothelial dysfunction 12,13,14 . Our study revealed that there was significant
67 increase in MDA levels was observed there is reasonable evidence to suggest that circulating neutrophils of patient
68 with preeclampsia release an excess of reactive oxygen species 15,16,17 , present study revealed decrease calcium
69 creatinine ratio observed in PIH women. Different studies concluded that calcium homoeostasis is an important
70 aspect of maternal and fetal physiology during gestation 18,19,20, ??1 . A certain calcium level is required for
71 production of endothelial derived releasing factor which maintains vasodilation in normal pregnancy. Alteration of
72 calcium metabolism has been implicated in pathogenesis of hypertension during pregnancy. Study concluded that
73 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.

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Parameter	Control n=125	PIH cases n=125	p value
Plasma MDA Nmol/ml III.	2.8 ± 0.48	5.2 ± 0.92	<0.001

Figure 1: Table 2 :

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