

A study of association of raised serum uric acid and serum creatinine recovery time in the patients having persistent hypertension having antenatal hypertension at tertiary health care centre

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Abstract

Background: Hypertensive disorders complicating pregnancy are the most common and serious medical disorder and constitute up to 2–10% of all pregnancies. **Aims and Objectives:** To study association of raised serum uric acid and serum creatinine recovery time in the patients having persistent Hypertension having antenatal hypertension at tertiary health care centre. **Methodology:** After approval from Institutional ethical committee this longitudinal study was carried out in the Department of OBGY in the patients with the known history of PIH, which were admitted or examined were studied in this; out of the all PIH patients, with written consent, 30 patients with Persisted Hypertension in puerperium and 30 PIH patients returned to normal in puerperium. All the patients were undergone serum uric acid and serum creatinine tests at admission and at 6th week. The statistical analysis was done by unpaired t-test, calculated by SPSS 18 version. **Result:** At the time of admission the Serum uric acid level (mg/dl) was comparable in both the groups i.e. 5.8 ± 2.78 and 6.1 ± 3.82 respectively ($t=0.34$, $df=58$, $p>0.05$) but at 6th week it was significantly higher in the persistant group i.e. 2.54 ± 1.98 and 7.43 ± 4.36 ($t=5.59$, $df=58$, $p<0.0001$). At the time of admission the Serum Creatinine level (mg/dl) was comparable in both the groups i.e. 1.34 ± 0.72 and 1.52 ± 0.84 respectively ($t=0.78$, $df=58$, $p>0.05$) but at 6th week it was significantly higher in the persistant group i.e. 0.94 ± 0.35 and 2.92 ± 0.85 ($t=21.79$, $df=58$, $p<0.0001$). **Conclusion:** It can be concluded from our study that raised serum uric acid and creatinine were significantly associated with persistent hypertension in the puerperium of the patients with previous history of PIH in ANC.

Key Words: Serum creatinine, serum uric acid, PIH (Pregnancy Induced Hypertension), ANC (Antenatal Care).

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INTRODUCTION

Hypertensive disorders complicating pregnancy are the most common and serious medical disorder and constitute up to 2–10% of all pregnancies.¹ Gestational hypertension (GH), preeclampsia (PE), and eclampsia are a part of a spectrum of hypertensive disorders that complicate pregnancy as specified by the National High Blood Pressure Education Program (NHBPEP) working group.² Though studies have mentioned various parameters in etiopathogenesis of hypertensive disorders of pregnancy, still it remains obscure. Serum uric acid and creatinine levels are a part of work up for the pregnant women with hypertension. The elevated levels of these parameters were due to decreased urinary clearance secondary to

reduced GFR and increased reabsorption.³ Serum uric acid is not only a marker of severity of disease but also contributes to the pathology of disorder.⁴ So, in our study we have seen the whether there is association of raised serum uric acid and serum creatinine recovery time in the patients having persistent Hypertension in puerperium.

MATERIAL AND METHODS

After approval from Institutional ethical committee this longitudinal study was carried out in the Department of OBGY in the patients with the known history of PIH, which were admitted or examined were studied in this; out of the all PIH patients, with written consent, 30 patients with Persisted Hypertension in puerperium and 30 PIH patients returned to normal in puerperium. All the patients were undergone serum uric acid and serum creatinine tests at admission and at 6th week. The statistical analysis was done by unpaired t-test, calculated by SPSS 18 version.

RESULT

Table 1: Distribution of the patients as per the serum uric acid level and Blood pressure

Serum uric acid level (mg/dl)	Non Persistent Hypertensive (30)	Persistent Hypertensive (30)	p-value
At Admission	5.8 ± 2.78	6.1 ± 3.82	t=0.34,df=58,p>0.05
At 6 th week	2.54 ± 1.98	7.43 ± 4.36	t=5.59,df=58,p<0.0001

At the time of admission the Serum uric acid level (mg/dl) was comparable in both the groups i.e. 5.8 ± 2.78 and 6.1 ± 3.82 respectively (t=0.34, df=58, p>0.05) but at 6th week it was significantly higher in the persistant group i.e. 2.54 ± 1.98 and 7.43 ± 4.36 (t=5.59,df=58,p<0.0001).

Table 2: Distribution of the patients as per the serum creatinine and Blood pressure

Serum Creatinine (mg/dl)	Non Persistent Hypertensive (30)	Persistent Hypertensive (30)	p-value
At Admission	1.34 ± 0.72	1.52 ± 0.84	t=0.78,df=58, p>0.05
At 6 th week	0.94 ± 0.35	2.92 ± 0.85	t=21.79,df=58, p<0.0001

At the time of admission the Serum Creatinine level (mg/dl) was comparable in both the groups i.e. 1.34 ± 0.72 and 1.52 ± 0.84 respectively (t=0.78, df=58, p>0.05) but at 6th week it was significantly higher in the persistant group i.e. 0.94 ± 0.35 and 2.92 ± 0.85 (t=21.79, df=58, p<0.0001).

DISCUSSION

Hypertensive disorders of pregnancy are GH and PE, increase obstetrics risk, such as abruption placenta, preterm labor, eclampsia, and HELLP syndrome. Renal dysfunction in these disorders is due to glomerular endothelial injury causing decrease in GFR. Various studies have mentioned elevated levels of renal markers, such as serum uric acid, creatinine, and urea in PE.^{5,6,7} Elevated uric acid levels in pre-eclamptic women may not simply be a marker of disease severity but possibly contribute directly to the pathogenesis of the disorder through ability of uric acid to promote inflammation, oxidative stress and endothelial dysfunction 8. Increased adenosine may be a source of this uric acid 9. Its levels are an indicator of ongoing oxidative stress 10 and could be responsible for the vascular injury of pre-eclampsia 11. Though often considered an antioxidant, biochemical and in-vitro data indicate that noncrystalline, soluble uric acid can react to form radicals, increase lipid oxidation and induce various pro-oxidant effects in vascular cells 12. From in-vitro and in- vivo studies, uric acid may contribute to endothelial dysfunction through inducing anti-proliferative effects on endothelium and impairing nitric oxide production in vascular smooth muscle cells (VSMCs) 13. Hypertension develops through increased chemokine and cytokine expression, induction of the renin-angiotensin system and increased vascular C-reactive protein (CRP) expression 14. This injury recovers within one month postpartum 15. Improvement in glomerular filtration capacity is accompanied by recovery of hypertension to near-normal levels and significant improvement in albuminuria. In our study we have seen that at the time of admission the Serum uric acid level (mg/dl) was comparable in both the groups i.e. 5.8 ± 2.78 and 6.1 ± 3.82 respectively (t=0.34,df=58,p>0.05) but at 6th week it was significantly higher in the persistant group i.e. 2.54 ± 1.98 and 7.43 ± 4.36 (t=5.59,df=58,p<0.0001). At the time of admission the Serum Creatinine level (mg/dl) was comparable in both the groups i.e. 1.34 ± 0.72 and 1.52 ± 0.84 respectively (t=0.78, df=58, p>0.05) but at 6th week it was significantly higher in the persistant group i.e. 0.94 ± 0.35 and 2.92 ± 0.85 (t=21.79, df=58,p<0.0001). These findings are similar to Emmanuel B Ndayambagye¹⁴ they observed that Fifty four (27.7%) out of the total 195 women had persistent hypertension after puerperium (p<0.05). Serum creatinine and the age of the patient were the only factors associated with persistence of hypertension after puerperium.

CONCLUSION

It can be concluded from our study that raised serum uric acid and creatinine were significantly associated with

persistent hypertension in the puerperium of the patients with previous history of PIH in ANC.

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