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ESTIMATION OF SERUM LDH AND URIC ACID IN PRE ECLAMPSIA AND ITS CORRELATION WITH MATERNAL AND PERINATAL OUTCOME

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ABSTRACT
Hypertensive disorder of pregnancy is third most common cause of maternal mortality. Hypertensive disorders complicate 6 to 8 percent of all pregnancies and together they form one member of the deadly triad, along with hemorrhage and infection that contribute greatly to maternal morbidity and mortality rates. Aim of our study is to estimate the levels of LDH and uric acid in PIH and to correlate with maternal and perinatal outcome. Methods: A prospective study conducted in Department of Obstetrics and Gynecology, ESIMC PGIMSR RAJAJINAGAR, Bangalore, Karnataka. Data collected from Eighty pregnant women with pregnancy induced hypertension who was attending antenatal checkup in our hospital. Serum LDH, Serum Uric acid were analysed in these women. Result: In our study 42 patients were primi and 38 were multi gravida. In our study there is an association between increased LDH and uric acid levels with the severity of PIH. Conclusion: Increased LDH level correlate with severity of PIH and has got poor perinatal outcome. So it can be considered as one of the biochemical marker.

INTRODUCTION

Preeclampsia and eclampsia complicate 6–8% of all pregnancies and lead to various maternal and fetal complications. PIH is multisystem disorder and lead to a lot of cellular death. LDH is an intracellular enzyme and its level is increased in PIH due to cellular death. So, serum LDH levels can be used to assess the extent of cellular death and thereby the severity of disease. This can be further used as a marker in making decision, regarding the management strategies to improve the maternal and fetal outcome [1].

Uric Acid is the major end products of Purine metabolism. The cause of hyperureicemia in pre eclampsia has been attributed to either a decreased excretion or to an increased production of uric acid. Decreased uric acid clearance, reflected by altered tubular function. Increased breakdown of purines in placenta as explanation of over production of uric acid [2]. Soluble uric acid impairs nitric oxide generation in endothelial cells inducing endothelial dysfunction. Hyperuricemia is one of the most consistent and earliest dectectable changes in Pre eclampsia and has cited a better predictor of fetal risk .Hence we are conducting this study to know the effects of LDH and uric acid levels in PIH patients and their outcome.

METHODS

This is a prospective study conducted in Department of Obstetrics and Gynecology, ESIMC PGIMSR Rajajinagar, Bangalore for 8 months from Jan 2014 to Aug 2014.

80 Pregnant women were enrolled in this study. Pregnant Women with pre existing diabetes, with chronic hypertension, renal disease and cardiac disease were excluded from the study. Patients were categorized in to two groups, mild pre eclampsia (defined as blood pressure

>140/90mmHg) and severe pre eclampsia (defined as blood pressure >160/110mmHg). Complete obstetric history, general physical examination and systemic examination were carried out. All the relevant investigations (including serum LDH and serum uric acid) were performed. Patients were followed up in terms of maternal outcome (Eclampsia, HELLP syndrome, mode of delivery, etc) and fetal outcome (birth weight, preterm birth , NICU admissions etc).

RESULTS

In our study out, of 80 pregnant women, 60 women had mild pre eclampsia and 20 women had severe pre eclampsia. In mild pre eclampsia group, serum LDH levels were less than 500U/L in all the cases. Se rum uric acid less than 6mg% in 73.3% of cases and >6 in 26.7% of cases. Gestational age at delivery was more than 34 weeks in 48(80%) women and less than 34 weeks in 12(20%) women. LSCS was in 54 women and full term vaginal delivery in 6 women.

In severe pre eclampsia group serum LDH levels were more than 500U/L and serum uric acid more than 6mg%. Gestational age at delivery was more than 34 weeks in 6 women and less than 34 weeks in 14 women, LSCS in 16 women, IUD in 4 women (2 term,2 preterm) IUGR was in 5 neonates. Neonatal admissions were not related to obstetric causes. APGAR SCORE at 1 minute and 5 minute were 7 and 9 respectively in most of neonates.

Statistical analysis was done by using chisquare test. P value was 0.000 for LDH was highly significant. P value for serum uric acid with respect to severe PIH was 0.000 (highly significant). With respect to gestational age and neonatal outcome statistically not significant (p value- 0.497 and 0.435 respectively).

Table 1. Parity

Primi	Multi
42 (56%)	38(44%)

Table 1 shows, 42 patients were primi and 38 were multi gravid.

Table 2. Age

20-25	26-30	31-35
40 (51%)	26 (33%)	14 (15%)

In our study 40 patients were belonging to 20-25 years, 26 patients belongs to 26-30 years , 14 patients belongs to 31-35 years.

Table 3. Correlation of enzymes with gestational age with mode of delivery with neonatal outcome in mild and severe hypertension

Level of PIH	LDH		Uric acid		Gestational Age(Wks)		Mode of delivery		Neonatal Outcome
Mild PIH <140/90	<500	>500	<6	>6	<34	>34	LSCS	Vaginal delivery	
	60	0	44(73.3%)	16(26.7%)	12(20%)	48(80%)	54(90%)	6(10%)	
Severe PIH >160/110	<500	>500	0	20	2	18	16(80%)	4 (20%)	IUD-4 IUGR-5

DISCUSSION

Pre-eclampsia is considered an idiopathic multisystem disorder that is specific to human pregnancy [3]. A complex of endocrinological mechanisms is believed to be responsible for the multiorgan dysfunction [4]. Several potential candidate biochemical markers have been proposed to predict the severity of pre-eclampsia [4-15]. Among these biomarker lactic dehydrogenase is confirmed as good marker associated with severe pre-eclampsia [16-18].

In our study, serum LDH and serum uric acid were significantly higher in severe pre eclampsia. In severe pre eclampsia group two had HELLP syndrome and four had IUD. The increased uric acid and serum LDH levels in our cases may be due to derangement in the metabolism that usually decreases their levels during pregnancy. This study also shows strong association between the LDH and uric acid levels and pre eclampsia and its complication. Plasma uric acid concentrartion is typically elevated in PIH. It likely results from reduced uric acid clearance from diminished golmerular filtration, increased tubular reabsorption and decreased secretion.

In contrast Hickman al concluded that the serum uric acid level was an unreliable indicator of developing hypertension in individual women. Many author believed that uric acid is one of the most consistent and earliest detectable changing parameter that occurs in PIH and have been cited as better predictor of fetal risk.

Decision on whether to allow a vaginal delivery may be a difficult in hypertension presenting with a live foetus because of concern that the time for induction to delivery interval may vary which result in worsening of maternal and perinatal outcome. This may explain the high caesarean section rate in our study as has been reported by other authors [19,20].

Only 2 patients developed HELLP Syndrome in our study. This contrasts sharply with the results of the study by Onah and Ilobachie, which was associated with increased risk of HELLP syndrome [17]. The mean gestational age at the time of delivery in the present study was less in patients with increasing LDH levels. This indicates increase in preterm and IUGR deliveries in patients with higher LDH levels.

The association of low birth weight of infants with increase in serum LDH levels was suggested by He et al in their study. This was in contrary to Qublan et al who did not find any significant association.

In the present study it was observed that there was significant association of low birth weight and increasing LDH levels. This could partially be due to higher incidence of premature births in this group [18].

CONCLUSION

PIH is a pregnancy specific syndrome. Elevated levels of lactic dehydrogenase, indicative the cellular damage and dysfunction can be used as a biochemical marker because it reflects the severity of the disease. Detection of high-risk pregnancies with increased levels of LDH requires close monitoring in antenatal period and proper management is necessary to decrease both maternal and fetal morbidity and mortality.

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