Original Article

Association of Serum Lactate Dehydrogenase Level with Maternal & Fetal Outcome in Women with Pregnancy Induced Hypertension at BPKIHS

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Abstract: Hypertension is a chronic condition common in society and pregnant women are not exemption to it. Hypertension in pregnancy is defined as "systolic blood pressure of ≥140 mmHg and/or diastolic blood pressure of ≥90mmHg. There are various parameters of Pregnancy induced hypertension like serum uric acid levels, risk factors, maternal and fetal outcomes have been done in B.P.Koirala Institute of Health Sciences previously but there are limited data on serum lactase dehydrogenase level in pregnancy induced hypertension This study was aimed at assessing the serum LDH level in women with PIH that may help in predicting the degree of severity of the disease, maternal and fetal complications and guiding timely intervention whenever indicated in pregnancy induced hypertension at BPKIHS, Dharan, Nepal. It was a prospective observational study conducted in the Department of Obstetrics and Gynaecology, B.P.Koirala Institute of Health Sciences, Dharan. All Pregnant women with provisional diagnosis of pregnancy induced hypertension admitted in maternity ward of Obstetrics and Gynecology Department fulfilling inclusion criteria in antepartum period were taken for the study. This study demonstrated that higher level of LDH > 800IU/L was observed with increased severity of PIH like eclampsia. Serum LDH level >800 IU/L was more in women with maternal complications like postpartum hemorrhage, abruptio placentae, and HELLP syndrome. This study also showed that the birth weight was lower in serum LDH >800U/L group and the fetal weight decreased with increasing severity of PIH.

Keywords: Serum Lactate, Dehydrogenase, Pregnancy, Hypertension at BPKIHS

1. INTRODUCTION

Hypertension is a chronic condition common in society and pregnant women are not exemption to it. Hypertension in pregnancy is defined as "systolic blood pressure of ≥140 mmHg and/or diastolic blood pressure of ≥90mmHg after 20 weeks of gestation on two occasions 4 to 6 hours apart but within a maximum of a week period in a woman with previously normal blood pressure [1]. Hypertensive disorders represents the most common medical complication of pregnancy affecting 7-15% of all gestations and account for a quarter of all antenatal admissions. Hypertensive disorders of pregnancy and their complications rank as one of the major cause of maternal mortality and morbidity in the world [2]. Together with hemorrhage and infection, hypertension forms deadly triad that contributes to maternal morbidity and mortality during pregnancy and childbirth [3]. It is strongly associated with fetal growth restriction and prematurity so it contributes largely to perinatal morbidity and mortality. According to the

severity and organs involvement, hypertensive disorders in pregnancy (HDP) can be classified as gestational hypertension, preeclampsia (PE) and eclampsia syndrome, chronic hypertension and preeclampsia superimposed on chronic hypertension [4]. The incidence is more prevalent in developing countries. The World Health Organization (WHO) systematically reviewed maternal mortality worldwide and in developed countries, 16% of maternal deaths were reported to be due to hypertensive disorders. This proportion is greater than three other leading causes that include haemorrhage 13 %, abortion 8% and sepsis 2%. The incidence of preterm birth due to preeclampsia (PE) alone is around 15%.9 Preeclampsia is strongly associated with intrauterine fetal growth restriction, low birth-weight, spontaneous or iatrogenic preterm delivery, respiratory distress syndrome and admission to intensive care unit [5]. The incidence of pregnancy induced hypertension is more common in young and nulliparous women. However, multiparous pregnant women with a new partner have an increased risk of preeclampsia similar to that of nulliparous women [6]. Several medical conditions like chronic hypertension, diabetes mellitus, renal disease and hypercoagulable states are associated with increased risk for complications. Hypertensive disorders in pregnancy can have potentially dangerous complications. Its severity ranges from elevation of blood pressure to subnormal level, treated in out-patient department (OPD) basis with medical management to the level of eclamptic fits with multiple organ involvement leading to death. Development of pregnancy induced hypertension(PIH) is associated with increased long term maternal health risks like hypertension in later life, stroke, ischemic heart disease and metabolic syndrome [7]. It is a multi-system disorder in which organs are affected at cellular level affecting the hepatic, hematologic, renal, cardiovascular and cerebrovascular systems [8]. Complications of PIH depends on severity, duration of illness and its onset of period of gestational age. To explain its occurrence, several hypotheses has been proposed [9]. The spiral arterioles within the decidua basalis undergo extensive remodelling during normal implantation. Endovascular trophoblasts replace the vascular endothelial and muscular linings to form high flow less resistance vessels. In preeclampsia, trophoblastic invasion is incomplete [10]. As a result of this, endovascular trophoblasts line decidual vessels but not myometrial vessels. The deeper myometrial arterioles retain their endothelial lining and musculoelastic tissue, and their mean external diameter is only half that of corresponding vessels in normal placentas [11]. Poor trophoblastic invasion results in oxidative stress, hypoxia, and the release of factors that promote endothelial dysfunction, inflammation, and other possible reactions [12]. In general, the magnitude of defective trophoblastic invasion is thought to correlate with severity of the hypertensive disorders [13]. Lactate dehydrogenase (LDH) is an intracellular enzyme which converts pyruvic acid to lactic acid during the process of glycolysis [14]. Glycolysis is the major energy pathway in the placenta, hypoxia in preeclampsia further enhances glycolysis and increases LDH iso-enzyme activity in trophoblasts resulting in higher lactate production [15].It normally appears throughout the body in small amount but levels are several times greater inside the cells especially in RBC and hepatocytes than in the plasma [16].Tissue breakdown release LDH so its levels are increased in the scenario of increased cell leakiness, hemolysis and cell death and therefore LDH can be used as a biochemical marker for tissue breakdown [17]. Studies have shown that LDH activity are higher in placentas of preeclampsia than normal pregnancy. Preeclampsia is a multisystem disorder that leads to cell lysis and release of LDH [18]. So, serum LDH levels can be used to assess the extent of cellular death and thereby the severity of disease and occurrence of complications [19]. Pre-eclamptic patients with higher levels of LDH are at high risk of developing subsequent complications with poor maternal and fetal outcome [20]. This shows that LDH level is a useful and reliable biochemical marker in pre-eclampsia. Identification of these high risk patients with elevated LDH level, their close monitoring and prompt management may prevent these

complications with subsequent decrease in maternal and fetal morbidity and mortality [21]. Serum LDH level is raised in PIH and indicate extent of cellular death thus helps in identifying severity of PIH and the occurrence of complications. These are preventable if identified at an earlier stage and can be managed. Close monitoring should be done with raised level of LDH level in pregnant women with PIH to prevent maternal and fetal morbidity and mortality [22]. Studies on various other parameters of Pregnancy induced hypertension like serum uric acid levels, risk factors, maternal and fetal outcomes have been done in B.P.Koirala Institute of Health Sciences previously but there are limited data on serum lactase dehydrogenase level in pregnancy induced hypertension [23]. Therefore, the present study was aimed at assessing the serum LDH level in women with PIH that may help in predicting the degree of severity of the disease, maternal and fetal complications and guiding timely intervention whenever indicated in pregnancy induced hypertension at BPKIHS, Dharan, Nepal.

2. MATERIALS & METHODS

It is a hospital based Prospective Observational study, where all pregnant women with >20 weeks of gestation presenting to Obstetrics and Gynecology Emergency of B.P. Koirala Institute of Health Sciences, Dharan, with provisional diagnosis of pregnancy induced hypertension. Now using one sample mean formula to estimate sample size,

$$\mathrm{n} = \mathrm{Z}^2\mathrm{SD}^2 \div \mu - \bar{x}$$

Where Z is the value from the standard normal distribution reflecting the confidence level that was used (e.g., Z = 1.96 for 95%),

SD: is the standard deviation of the outcome variable

μ: normal cut off value (according to Gupta et. al29.)

$\bar{x}$: 627 (according to Gupta et.al29.)

Then n= 290

But according to medical record of BPKIHS 2018, only 150 cases were admitted with pregnancy induced hypertension. Therefore, corrected sample size formula used to find out actual sample size:

$$\text{Corrected sample size} = \frac{\textbf{calculated sample size}}{1+\frac{\textbf{calculted sample size}}{\textbf{estimated population}}} = 100$$

However, the study considered all patients of pregnancy induced hypertension and was included in this study who attended BPKIHS during the study period. This was a prospective observational study conducted in the Department of Obstetrics and Gynaecology, B.P.Koirala Institute of Health Sciences, Dharan. All Pregnant women with provisional diagnosis of pregnancy induced hypertension admitted in maternity ward of Obstetrics and Gynecology Department fulfilling inclusion criteria in antepartum period were taken for the study.

3. RESULTS & DISCUSSION

During the study a total of 166 cases of PIH were admitted in maternity and labor room for delivery. The total number of deliveries during study period was 8925. Among these, the total number of hypertensive

disorder in pregnancy was 166 so the incidence of hypertensive disorder in pregnancy was 1.85% of total deliveries.

Table 01: Baseline characteristics of the PIH patient

Characteristics	N	Mean ±Std. Deviation
Age (years)	106	26.50±5.328
POG (weeks) at presentation	106	36.95±3.768
POG (weeks) at delivery	106	37.57±2.921
Height (cm)	106	153.29±5.127
Weight (kg)	106	66.29±11.408
Systolic BP (mmHg)	106	149.81±13.521
Diastolic BP (mmHg)	106	99.72±11.419
Hospital stay (days)	106	5.18±3.499

Among the 106 patients enrolled in the study, the patients had mean age of 26.50±5.328 years, average POG at presentation to the hospital was 36.95±3.768 weeks, whereas mean POG at delivery of 37.57±2.921 weeks, the mean systolic blood pressure was149.81±13.521 mmHg, and diastolic blood pressure was 99.72±11.419 mmHg. The average length of stay in the hospital was 5.18±3.499 days. General analysis was done on variables like severity of PIH, age of patients, parity, gestational age at the time of delivery and serum LDH level calculating frequency and percentage.

Table 02: Number of PIH patients according to severity

PIH patients	Number	Percentage (%)
Gestational Hypertension	22	20.8
Non severe preeclampsia	51	48.1
Severe preeclampsia	27	25.5
Eclampsia	6	5.7
Total	106	100

Among 106 PIH patients, 22 (20.8%) had gestational hypertension, 51 (48.1%) non-severe preeclampsia, 27(25.5%) severe preeclampsia and 6 (5.7%) had eclampsia.

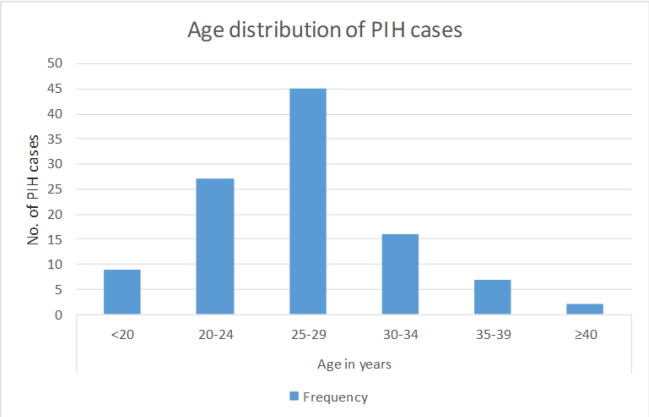

Figure 01: Distribution of age in patients with pregnancy induced hypertension

Among 106 patients enrolled in the study most of the cases i.e. 45 (42.5%) belonged to age group of 25-29 years. Age ranged from 16 years to 43 years and the mean age was 26.50±5.328 years.

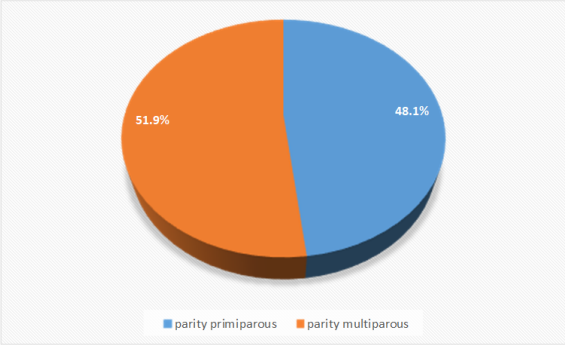

Figure 02: Distribution of parity in patients with pregnancy induced hypertension

Among 106 patients, 51.9% were multiparous and remaining 48.1% of the patients were primiparous. Gestational age at the time of presentation in PIH

Table 03: Number of PIH patients according to gestational age at presentation in weeks

Gestational age in weeks (weeks)	Number of cases	Percentage (%)
20-28	3	2.83
28-31	5	4.71
32-36	29	27.35
37-39	44	41.50
≥40	25	23.58
Total	106	100

Among 106 patients, majority of PIH patients i.e. 41.50% presented at 37-39 weeks period of gestation (POG) followed by 28 patients(27.35%) at 32-36 weeks period of gestation.

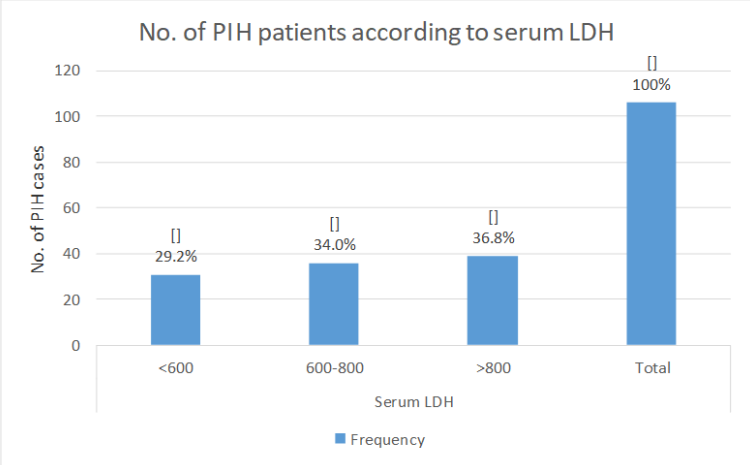

Figure 03: Distribution of patients according to serum LDH level

Out of 106 PIH patients, 31 (29.2%) had LDH <600 IU/L, 36 (34.0%) had LDH 600-800 IU/L and 39 (36.8%) had LDH >800 IU/L. Serum LDH ranged from 113 to 2105 IU/L. Correlation of systolic and diastolic blood

pressure was done with serum LDH level using Fischer exact test. Association of systolic blood pressure and serum LDH levels.

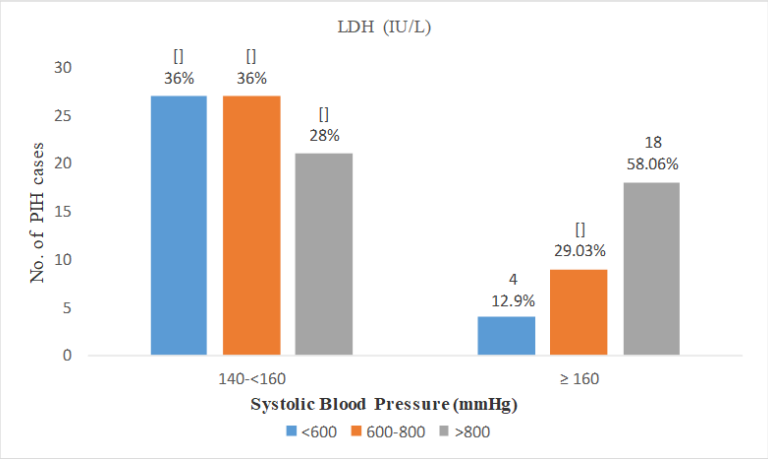

Figure 04: Association of systolic blood pressure and serum LDH levels.

Among 31 PIH patients who had SBP≥160mmHg 4(12.9%) had LDH<600 U/L, 9(29.03%) had LDH 600-800U/L and 18(58.06%) had LDH >800 U/L. The serum LDH levels increased significantly with higher systolic blood pressure (p value 0.008).

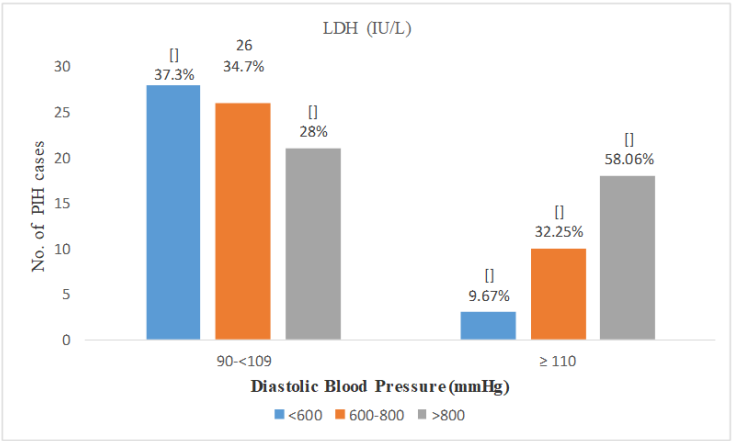

Figure 05: Association of diastolic blood pressure and serum LDH levels.

Among the 31 patients with DBP≥110mmHg, 3 (9.67%) patients had LDH<600U/L, 10(32.25%) had LDH 600-800U/L and 18(58.06%) had LDH >800 U/L. Serum LDH levels increased significantly with increasing diastolic blood pressure (DBP) (p value: 0.003).

Table 04: Severity of PIH according to LDH level

Severity of PIH	<600 N =31	600-800 N = 36	>800 N = 39	Total N=106	P value
Gestational Hypertension	7 22.6%	6 16.7%	9 23.1%	22	0.012
Non-severe preeclampsia	21 67.7%	19 52.8%	11 28.2%	51	
Severe preeclampsia	3 9.7%	9 25.0%	15 38.5%	27	
Eclampsia	0	2 5.6%	4 10.3%	6	

*Fisher's exact test

Out of 39 patients having LDH >800IU/L, 4 (10.3%) were eclampsia, 15 (38.5%) severe preeclampsia, 11(28.2%) non-severe preeclampsia and 9 (23.1%) gestational hypertension (p value 0.012). So, LDH level increased with increasing severity of PIH. Hence it showed that with the increase in level of LDH, severity of PIH also increased.

Table 05: Severity of PIH patients with mean serum LDH

Severity of PIH	Mean serum LDH(IU/L)
Gestational Hypertension	817.55±345.05
Non severe preeclampsia	665.55±235.34
Severe preeclampsia	897.73±341.86
Eclampsia	1135.67±513.01
Total	782.75±330.27
P value	<0.001

*Anova test

There was significant rise in mean LDH levels with increasing severity of disease. The mean serum LDH was 817.55±345.05IU/L in gestational hypertension, 666.55±235.34IU/L in non-severe preeclampsia, 897.33±341.86IU/L in severe preeclampsia, and 1135.67±513.01IU/L in eclampsia (p value <0.001).

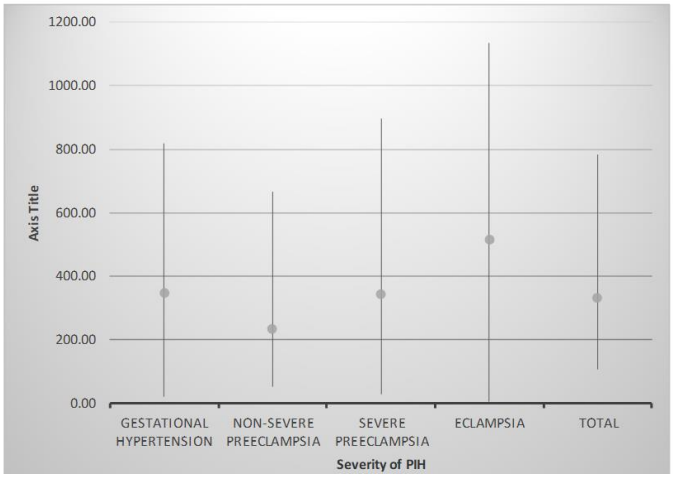

Figure 06: Association between severities of PIH with serum LDH level

Figure 06 depicts a scatter plot with scatter points indicating a statistically significant positive association between the severity of PIH and serum LDH levels (p value <0.001).

Table 06: Mode of delivery according to level of LDH

Mode of delivery	Serum Lactate dehydrogenase level (IU/L)				
	<600 N=31	600-800 N=36	>800 N=39	Total N=106	P value
Vaginal delivery	14 (45.2%)	10 (27.8%)	13 (33.3%)	37 (34.9%)	0.487
Vacuum Assisted Vaginal delivery	0	1 (2.8%)	2 (5.1%)	3 (2.8%)	
Caesarean section	17 (54.8%)	25 (69.4%)	24 (61.5%)	68 (62.3%)	

*Fisher's exact test

Among 106 patients, 37(34.9%) patients had vaginal delivery, 3(2.8%) had vacuum assisted vaginal delivery, and 68(62.3%) had caesarean section. There was 33.3% vaginal deliveries, 5.1%vacuum assisted vaginal deliveries and 61.5% caesarean section in patients with LDH >800 IU/L. However, it was not statistically significant. Maternal complications were correlated in relation to LDH level using Pearson Chi-square test and Fisher's exact test.

Table 07: Maternal complications according to LDH level

Maternal complication	Serum Lactate dehydrogenase level (IU/L)				
	<600 N=31	600-800 N=36	>800 N=39	Total N=106	P value
Yes	0	2 (5.6%)	10 (25.6%)	12 (11.3%)	0.001
No	31 (100%)	34 (94.4%)	29 (74.4%)	94 (88.7%)	

*Chi-square test

Among 106 cases, 12 (11.3%) developed maternal complications and was statistically significant (p 0.001). None of the complications developed in serum LDH <600IU/L groups, 2 (5.8%) patients had complications LDH 600-800IU/L group, and 10(25.6%) had complications in LDH>800IU/L group.

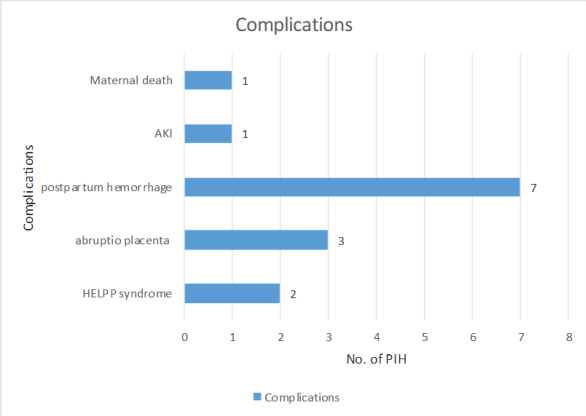

Figure 07: Complications of Pregnancy induced hypertension

Among 12(11.3%) patients having complications, the most common complication was postpartum hemorrhage, followed by abruptio placenta, HELLP syndrome and acute kidney injury. There was one maternal mortality.

Table 08: Complications of PIH according to LDH level

Maternal Complications	Serum Lactate dehydrogenase level (IU/L)				
	<600 N=31	600-800 N=36	>800 N=39	Total N=106	P value
Abruptio placentae	0	1 (2.8%)	2 (2.1%)	3 (2.8%)	0.774
HELLP syndrome	0	0	2 (5.1%)	2 (1.9%)	0.330
Postpartum hemorrhage (PPH)	0	1 (2.8%)	6 (15.4%)	7 (6.6%)	0.022
Maternal death	0	0	1 (2.6%)	1 (0.9%)	1.00
Acute kidney injury(AKI)	0	0	1 (2.6%)	1 (0.9%)	1.00

Fischer exact test

Among the PIH subjects in serum LDH>800IU/L group, most of them 12 (30.76%) had complications. Most common complication was postpartum hemorrhage (15.4%) which was statistically significant (p 0.022). The other complications were abruptio placenta (2.8%), and HELLP syndrome.

Table 09: Need of maternal ICU stay according to LDH level

Need of maternal ICU admission	Serum Lactate dehydrogenase level (IU/L)				
	<600 N=31	600-800 N=36	>800 N=39	Total N=106	P value
Yes	1 (3.22%)	3 (8.33%)	6 (15.4%)	10 (9.4%)	0.238
No	30 (96.77%)	33 (91.66%)	33 (84.6%)	96 (90.6%)	

*Chi square test

Out of 106 PIH patients, 10 (9.4%) needed ICU admission. Out of these 6 patients had LDH >800 IU/L, 3 cases had LDH 600-800 IU/L and 1 case was admitted with LDH<600 IU/L and the need of maternal ICU was comparable among the different serum LDH group. Among patients those required ICU care; 3 patients were of PPH, 3 eclampsia, 1 abruption placenta, 1 abruption with PPH, 1 abruption with HELLP syndrome, and 1 patient eclampsia with acute kidney injury. Perinatal complications were correlated in relation to LDH by using Pearson Chi square test, Fisher's exact test and Anova test.

Table 10: Gestational age at the time of delivery in PIH according to LDH level

Gestational age at the time of delivery In weeks (weeks)	Serum Lactate dehydrogenase level (IU/L)				P value
	<600 N = 31	600-800 N= 36	>800 N=39	Total N=106	
20-28 weeks	0	0	0	0	0.823
28-31 weeks	0	1 (2.7%)	3 (7.7%)	4 (3.8%)	
32-36 weeks	7 (22.5%)	9 (25%)	9 (25.6%)	26 (24.5%)	
37-39 weeks	17 (54.83%)	17 (47.2%)	16 (41.0%)	50 (47.2%)	
≥ 40 weeks	7 (22.5%)	9 (25%)	10 (25.36%)	26 (24.5%)	

*Fisher's exact test

Majority of PIH cases were in gestational age of 37-39 weeks at the time of delivery. Among PIH cases those having LDH level > 800 IU/L, 16 (42.1%) cases were in gestational age 37-39 weeks and it was comparable to other groups.

Table 11: Birth weight according to serum LDH level

Birth weight group	Serum lactate dehydrogenase level (IU/L)				
	<600 N=31	600-800 N=36	>800 N=39	Total N=106	P value
<1500g	1 (3.2%)	2 (5.5%)	6 (15.4%)	9 (8.5%)	0.013
1500-2499g	4 (12.9%)	11 (30.5%)	15 (38.5%)	30 (28.3%)	
2500-3999g	26 (83.8%)	21 (58.3%)	18 (46.2%)	65 (61.3%)	
≥4000g	0	2 (5.5%)	0	2 (1.9%)	

*Fisher's exact test

There was significant (p 0.013) relationship between birth weight and LDH level. Increase in birth weight was seen in group with serum LDH<600U/L i.e. 1(3.2%) had birth weight <1500gm, 4(12.9%) had birth weight 1500-2499gm and 26(83.8%) had birth weight 2500-3999gm. Similarly low birth weight was seen in serum LDH >800U/L i.e. 6(15.4%) had birth weight <1500gm, 15(38.5%) had birth weight 1500-2499gm and 18(46.2%) had birth weight 2500-3999gm.

Table 12: Mean Gestational age at the time of delivery and mean birth weight according to LDH level

Fetal outcome	Serum Lactate dehydrogenase (IU/L)				
	<600 N=31	600-800 N=36	>800 N=39	Total N=106	P value
Mean gestational age (weeks) at the time of	38.06± 2.20	37.78± 2.74	37.11±3.43	36.97±3.49	0.263

delivery					
Mean birth weight (gm)	2952.5±684.3	2739.7±745.9	2375.1±831.5	2667.8±791.8	0.007

*ANOVA

The mean gestational age at the time of delivery decreased successively with the increase in level of serum LDH. It was 38.06±2.20 weeks in women with LDH levels <600IU/l, 37.78±2.74 weeks when LDH levels were between 600 and 800 IU/L and 37.11±3.43 weeks in women with LDH levels >800 IU/l. There was no significant association between serum LDH level and mean gestation age at the time of delivery (p=0.263). The mean birth-weight decreased with the increase in LDH level which was 2952 ±684gm in women with LDH levels <600 IU/l, 2739±745gm in women with LDH levels between 600-800IU/l and women with >800 IU/l it was 2375.13±831.59gm which was statistically significant (p value- 0.007).

Table 13: Relation of Apgar score at 5 minutes and LDH level

Apgar score at 5 min	Serum Lactate dehydrogenase level (IU/L)				P value
	<600	600-800	>800	Total	
Apgar score 1-6	1 (6.3%)	3 (11.4%)	6 (16.7%)	10 (9.4%)	0.199
Apgar score ≥7	29 (93.8%)	32 (88.6%)	29 (83.3%)	90 (90.1%)	
Total	30	35	35	100	

*6 cases were excluded (IUFD/Still birth)

There was no significant relation between Apgar score at 5 minutes and serum LDH level.Among 106 cases, neonates born to 10 patients (9.4%) had Apgar score between1-6 and neonates born to 90 patients (90.1%) had Apgar score ≥7.

Table 14: Perinatal complications according to LDH level

Perinatal outcomes	Serum Lactate dehydrogenase (IU/L)				
	<600 N=31	600-800 N=36	>800 N=39	Total N=106	P value (0.468)
IUGR	3 (9.67%)	4 (11.1%)	3 (7.7%)	10 (9.4%)	0.917
IUFD/Stillbirth	1 (3.2%)	1 (2.7%)	4 (10.3%)	6 (5.7%)	0.371
Admission to NICU/Nursery/NNW	2 (6.4%)	3 (8.3%)	7 (17.9%)	23 (21.69%)	0.563
Neonatal death(NND)	0	0	1 (2.6%)	1 (0.9%)	1.00

In this study, it showed 10 (9.4%) of total PIH patients had IUGR. Among those having LDH level >800 IU/L, 3(7.7%) had IUGR. The study showed 6 (5.7%) IUFD. Among those having LDH level >800 IU/L, 4 (10.3%) had IUFD. Twenty three cases (11.3%) had admission to NICU/Nursery/NNW. The most common reason for admission was prematurity 7 neonates (30.43%), followed by meconium aspiration syndrome 5 neonates (21.73%), and respiratory distress syndrome 4 neonates (17.39%).Neonatal death occurred in 1 neonate (0.9%) who had meconium aspiration syndrome, and had LDH > 800 IU/L.

3.2 Discussion

Pregnancy induced hypertension is a multisystem disorder, it complicates 7-15 % of all pregnancies. It can progress to its severe form resulting in life threatening complications to the mother as well as fetus if timely interventions are not taken [24]. Worldwide, hypertensive disorder in pregnancy remains a leading cause of maternal mortality. According to practice bulletin 33 published by ACOG in 2002, it estimated that 10–15% of the 500,000 maternal deaths each year was due to PIH [25]. According to WHO 2012, four millions women across the world develop hypertensive disorder in pregnancy every year and it was estimated 50000 to 76000 women die of this condition every year. It is responsible for 15-20% of maternal death worldwide [26]. In Nepal, the maternal mortality was 239 per 1,00,000 live birth according to Nepal Demographic Health Survey 2016, hypertensive disorder in pregnancy being the second most common cause [27]. In the present study, among 106 patients enrolled, 75 (70.75%) patients had SBP between 140 -159mmHg and 31 (29.24%) patients had SBP ≥160 mmHg. Meanwhile, 75 (70.75%) patients had DBP between 90-109 mmHg and 31 (29.24%) patients had DBP ≥110mmHg. Those patients with severely increased systolic and diastolic BP had higher LDH levels. Among 31 PIH cases who had SBP ≥160 mmHg, 18 (58.06%) had LDH > 800 IU/L, 9 (29.03%) between 600-800IU/L and 4 (12.90%) had LDH <600 IU/L [28]. Similarly, among 31 PIH cases with DBP ≥110mmHg%, 18 (58.06%) had LDH>800 IU/L, 10 (32.25%) between 600-800 IU/L and 3 (9.67%) had LDH <600 IU/L [29]. Total 12 babies (11.3%) got admission to NICU/Neonatal ward/Nursery in present study. Among these 7(58.33%) babies whose mother had LDH level >800 IU/L, 3 (25%) babies mother had LDH 600-800IU/L and 2 (16.66%) babies got admitted [30].

4. CONCLUSIONS

This observational study conducted in B.P. Koirala Institute of Health Sciences in department of Obstetrics and Gynecology to evaluate the association between serum LDH level and severity of PIH, maternal and fetal complications. This study demonstrated that higher level of LDH > 800IU/L was observed with increased severity of PIH like eclampsia. Serum LDH level >800 IU/L was more in women with maternal complications like postpartum hemorrhage, abruptio placentae, and HELLP syndrome. This study also showed that the birth weight was lower in serum LDH >800U/L group and the fetal weight decreased with increasing severity of PIH. This study also showed that more fetal complications like IUGR, IUFD and neonatal death were more common in PIH patients with LDH level >800 IU/L. Thus, increase in serum LDH level was associated with severity of PIH along with maternal and fetal complications.The result of present study also recommends further studies to evaluate the cut off value of LDH level at which fetal and maternal complications tend to occur.

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