Original Article

Management and Outcome of Pre-eclampsia/Eclampsia among patient admitted in maternity ward in tertiary hospital

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Abstract

Introduction: Pre-eclampsia /eclampsia is the second leading cause of maternal mortality in Nepal. This study was done to identify the Proportion of pre-eclampsia/eclampsia cases, its management procedures and outcome among women.

Methodology: The retrospective study was done in maternity ward of Tribhuwan University Teaching Hospital (TUTH). The Women admitted in maternity ward from April 14, 2011 to March 14, 2012 having diagnosis of pre eclampsia / eclampsia was included in the study. Sampling technique was census.

Results: Among 4175 admitted cases 4.35% were diagnosed as pre-eclampsia /eclampsia with proportion of 3.88%, 0.38%, 0.09% mild pre-eclampsia, severe pre-eclampsia and eclampsia respectively. More than half (61.5%) were primi parous, 98.4% were booked case and 74.2% came after 37 weeks gestation for admission. Only 1.6% was referred cases. Antihypertensive drug was used in 60.5% mild pre-eclampsia, all severe preeclampsia and eclampsia cases. Magnesium sulphate was used in 62.5% severe pre-eclampsia and all eclampsia cases. Only 15% pre-eclampsia /eclampsia cases were managed by using the partograph properly. Majority of (94.4%) severe pre-eclampsia and all of eclampsia cases gave child birth by cesarean section and majority of mild pre-eclampsia by vaginally. In majority of cases, there was no life threatening maternal and neonatal complications.

Conclusion: The prevalence of pre-eclampsia is very low as compared to national figure. It is concluded that pre-eclampsia/eclampsia cases were managed properly which is reflected by the positive maternal and fetal outcome.

Key Words: Eclampsia, Pregnancy induced hypertension, Pre-eclampsia

Introduction

Hypertensive disorders of pregnancy are responsible for significant maternal and perinatal morbidity and second leading cause of maternal mortality.[1] Hypertensive disorders, which include pre-eclampsia/eclampsia, represent a significant proportion of maternal deaths worldwide. Such deaths account 9.1%, 9.1% and 25.7% in Sub-Saharan Africa, South Asia, and Latin America respectively[2] and case fatality rates are higher in less developed countries than developed countries, ranging from 26.3% in South Africa to 1.8% in the United Kingdom.[3] Nepal Maternal Mortality and Morbidity Study 2008-09 showed that pre-eclampsia/eclampsia is the second most common cause of maternal mortality.[4] Maternal death is largely following complications from abruption placentae, hepatic rupture and eclampsia.[5] Overall perinatal mortality is increased five-fold in patients of pre-eclampsia with iatrogenic prematurity being the main cause.[6]

Despite advances in management practice, pre-eclampsia / eclampsia still remains a leading cause of maternal and perinatal morbidity and mortality throughout the world. Therefore this study aimed to review the management

procedure and maternal and perinatal outcomes in the cases of pre-eclampsia/eclampsia at a tertiary hospital.

Methods

This retrospective study was done in maternity ward of TUTH. The Women admitted in maternity ward from April 14, 2011 to March 14, 2012 having diagnosis of pre eclampsia / eclampsia with gestational hypertension till 6 weeks of delivery, history of fits after 20 weeks of gestation or within 6 weeks of delivery and proteinuria were included in the study. History of essential hypertension and epilepsy were excluded from the study. Sampling technique was census for the study. Firstly, cases were selected from the maternity register in the maternity ward, then chart of those cases were reviewed in the record section. Ethical approval was taken from the NHRC and Research Department of IOM, and the permission for data collection was obtained from the concerned authority of TUTH. The data was collected by using structured tool. All the information was entered in SPSS software and the descriptive as well as inferential statistics was used for the data analysis.

Results

Among 4175 cases 182(4.35%) were diagnosed as pre-eclampsia / eclampsia with proportion of 162(3.88%), 16(0.38%), 4(0.09%) mild pre-eclampsia, severe pre-eclampsia and eclampsia respectively.

Table 1: Socio-Demographic Characteristics of the Women (n=182)

Variables	Frequency	Percent
Age in year		
Below 20	7	3.8
20 to 25	79	43.4
25-30	64	35.2
30-35	28	15.4
35-40	3	1.6
>40	1	.5
Mean ±SD	25.96±4.38	
Ethnicity		
Brahmin	53	29.1
Chettri	48	26.4
Newar	34	18.7
Mongolian	39	21.4
Others	8	4.4

Regarding the age of women, 43.3% belongs to age group 20-25 years, 35.4 % of women belong to age group 25-30years, 15.4 % belongs to age 30-35years, 3.8% belongs to under the age 20 years, 1.6 % belong to age 35-40 and 0.5% belongs to above the age of 40 years. In regard to ethnicity, 29.1% of the women were Brahmin, 26.4% were Chhetri, 21.4%% Mongolian, 18.7% Newar and 4.4 % were others (as shown in table 1).

Table 2: Obstetrical Characteristics of the Women (n=182)

Variables	Frequency	Percent
Parity		
Primi	112	61.5
Multi	62	34.1
Grand multi	8	4.4
Gestational Age		
>37 weeks	47	25.8
37 to 42 weeks	135	74.2
Antenatal check Up		
Yes	179	98.4
No	3	1.6

Among 182 women, 112(61.5%) were primipara, 74.2% with 37- 42 weeks of gestation; 98.4% were booked cases and 1.6% referred by other institution, those cases belonged to one severe pre-eclampsia and two eclampsia as dipicted in table 2 and 3.

Multiple Responses

Out of 162 mild pre-eclampsia cases; 99.4% woman's BP measured 4 hourly, liver and renal function tests done in 85.8%, antihypertensive drug was used in 60.5%, CTG in 52.5%, and kick chart maintained in 15.5%. Out of 16 severe pre-eclampsia cases, 87.5 % were started IV drip with RL, antihypertensive drugs and MgSO4 were given to 100% and 62.5% respectively, 100% of fetal condition were assessed clinically , 93.8% were assessed by CTG; 93.8% women's renal and liver function test was done, and 87.5% platelet count was assessed. Out of 4 eclampsia cases, 100% were kept in lateral position, cleared airway, given oxygen, started intravenous drips, monitored blood pressure, treated with antihypertensive drugs, monitored urinary output by inserting indwelling catheter. Similarly 100% fetal condition was monitored by CTG, and 50% women were monitored in ICU (dipicted in table 3).

Table 3: General Management of Pre-eclampsia/Eclampsia (n=182)

Variables **Mild Pre -Eclampsia (MPE) (n=162)**	**Freqency**	**Percentage**
BP measured 4 hourly	161	99.4%
Kick Chart	25	15.4%
Liver and renal function test done	139	85.8%
Anti-hypertension treatment provided	98	60.5%
Cardiotocograph (CTG) done daily	85	52.5%
Severe pre-eclampsia (SPE) (n=16)		
An intravenous drip with Ringer's Lactate started	14	87.5%
Antihypertensive administered	16	100.0%
Magnesium sulphate started as a prophylaxis	10	62.5%
Fetus condition clinically assessed for fetal distress	16	100.0%
Renal and Liver function assessed	15	93.8%
Platelet count assessed	14	87.5%
Fetal condition assessed by CTG	15	93.8%
Eclampsia (n=4)		
Women placed on her side (lateral position)	4	100%
Airway cleared	4	100%
Oxygen given	4	100%
An intravenous drip started	4	100%
MgSO4 given	4	100%
Blood pressure monitored every 15 minutes	4	100%
Use of antihypertensive drug	4	100%
CTG done to monitor fetal condition	4	100%
Indwelling catheter inserted to monitor urine output	4	100%
Woman monitored in ICU	2	50%

Table 4: Management of pre-eclampsia /eclampsi (SPE/ E) during labour (n=166)

Management **First stage labour**	**Mild PE n =147**	**SPE/E n=19**
Blood Pressure measured half an hourly	47(32.0%)	19(100%)
Urine output assessed hourly	20(13.6%)	19(100%)
Antihypertensive drug given	90(61.2%)	19(100%)
proper use of partograph	22(15.0%)	2(10.5%)
Mental status monitored/noted	5(3.4%)	19(100%)
Second and third Stage of Labour		
Blood Pressure measured every 15 min	18(12.2%)	9(47.4%)
Fetal heart monitored after every contraction	63(42.9%)	14(73.7%)
Delivered within expected time period	83(56.5%)	7(36.8%)
Oxytocin (IV and IM) given	145(98.6%)	18(94.7%)
Postpartum hemorrhage (>500ml)	6(4.1%)	1(5.3%)
Monitored BP immediately after delivery	147(100.0%)	19(100%)
Controlled BP after delivery	145(98.6%)	14(73.7)

Multiple Responses

Among 182 pre-eclampsia/eclampsia cases, 166 were managed during labour, and remaining 16 were discharged before labour pain started. Among those discharged cases, 15 were mild pre-eclampsia and one was severe pre-eclampsia (table 4)

Out of 162 mild pre-eclampsia/eclampsia cases, 147(90.7%) were delivered and 15(9.3%) were discharged before delivery. In the first stage; 32% women's BP was measured half hourly, 13.6% women's urine output was assessed hourly, 61.2% were treated with antihypertensive drug, 15% women's labor was managed by using partograph properly, only 3.4%women's mental status was monitored. In the second and third stage labour; 18(12.2%) women's BP was measured, 63(42.9%) women's fetal heart was monitored, in 83(56.5%) baby delivered within two hours, 145(98.6%) were given Inj oxytocin drug after delivery, only 6(4.1%) had more than 500ml blood loss, the diastolic BP less than 90 mm Hg was maintained in 98.6%after delivery. About the management of first stage of labor in severe pre-eclampsia and eclampsia; in 19(100%) cases, BP measured half hourly, assessed urine output hourly, gave antihypertensive drug and monitored mental status of women. Partograph was used properly in 10.5% cases. In the management of second and third stage of labor; in 47.7% BP measured in every 15 minutes, 73.7% monitored FHS, 36.8% delivered within two hours,, 94.7% got Inj oxytocin, in all cases BP was measured immediately after delivery, and 73.7% had controlled BP after delivery.

Table 5: Use of Magnesium Sulphate (MgSO4) (n=19)

Variables	Severe PE n=15	Eclampsia n=4
MgSO4 diluted in Distilled water	8(50.0%)	4(100.0%)
Loading dose of 4 gm IV and 5gm IM in each buttock	8(50.0%)	4(100.0%)
Lignocaine mixed in **MgSO4** during IM injection	8(50.0%)	4(100.0%)
Maintenance of 5 gm of **MgSO4** IM given 4 hourly	8(50.0%)	4(100.0%)
Patellar (Knee) reflex assessed	6(37.5%)	4(100.0%)
Respiratory rate measured	5(31.3%)	4(100.0%)
Urine output measured	8(50.0%)	4(100.0%)

*** Multiple Responses**

MgSO4 received by 50% of severe pre-eclampsia and 100% of eclampsia cases. MgSO4 loading and maintenance dose was given to 8(50%) of severe pre-eclampsia and 100% of eclampsia cases. Patellar reflex was assessed in 37.5% of pre-eclampsia and 100% in eclampsia before giving the MgSO4. Respiratory rate was measured in 31.3% severe pre-eclampsia and 100.0% eclampsia cases; urine output was measured 50% in severe pre-eclampsia and 100% in eclampsia.

Table 6: Mode of Delivery (n=166)

Mode of delivery	Mild PE (n=147)	Severe PE (n=15)	Eclampsia (n=4)	Total (n=166)
Spontaneous Vaginal Delivery (SVD)	75(51%	1(6.6%)	0(0%)	76(45.7%)
Breech Delivery	1(0.6%)	0(0%)	0(0%)	1(0.6%
Caesarean Section(C/S)	67(45.5%)	14(94.4%)	4(100%)	85(51.2%)
Vacuum Delivery	4(2.7%)	0(0%)	0(0%)	4(2.4%)

Out of 166 deliveries; 76(45.7%) gave birth by SVD, 1(0.6%) by breech delivery, 85(51.2%) by C/S and 4(2.4%) by vacuum extraction. Using ANOVA F test at 95% confidence level P value was found to be 0.00 which is less than significance level 0.05 that indicates there is significant difference between diagnosis and mode of delivery.

Table 7: Maternal Complications (n=166)

Maternal complication	Mild PE (n=147)	Severe P (n=15)	Eclampsia (n=4)	Total
Complication absent	137	14	3	154(92.7%)
Complication present	10	1	1	12(7.22%)
Abruptio placenta	1(10%)	0(0%)	0(0%)	1(8.33%)
PPH	6(60%)	0(0%)	1(50%)	7(58.33%)
Cervical tear	1(10%)	0(0%)	0(0%)	1(8.33%)
Retained placenta	1(10%)	0(0%)	0(0%)	1(8.33%)
Puerperal sepsis	1(10%)	1(100%)	0(0%)	2(16.66%)

Among 166 deliveries; only12 (7.22%) had maternal complications like 1(8.33%) abruption placenta, 7(58.33%) PPH, 1(8.33%) cervical tear, 1(8.33%) retained placenta and 2(16.66%) puerperal sepsis.

Table 8: Neonatal Outcome (n=166)

Neonatal outcome	Mild PE(n =147)	Severe PE (n=15)	Eclampsia(n=4)	Total (n=166)
Alive	146	15	4	165
Still birth	1	0	0	1
Apgar score				
0-3	1(0.6%)	0(0%)	0(0%)	1(0.6%)
4-6	1(0.6 %)	0(0%)	0(0%)	1(0.6%)
7-10	145(98.8%)	15(100%)	4(2.4%)	164(98.8%)
Birth weight				
<2.5kg	24(16.3%)	10(66.6%)	2(50.0%)	36
2.5- 4kg	120(81.6%)	5(33.3%)	2(50.0%)	127
>4kg	3(2.0%)	0(0%)	0(0%)	3

Among 166 deliveries; only one (0.6%) was stillbirth. In mild pre-eclampsia; 98.8% had 7-10 Apgar score while in severe pre-eclampsia and eclampsia 100% had Apgar score 7-10. In 50% eclampsia, 66.6% severe pre eclampsia and 16.3% mild pre eclampsia cases had low birth weight that is <2.5 kg. Using Pearson chi-square test at 95% confidence level P value was 0.00 that is less than significance level 0.05 which indicates that there is significant difference between diagnosis and birth weight.

Table 9: Neonatal Complications (n=166)

Neonatal complication	Frequency	Percent
Complication absent	**141**	**84.9%**
Complication present	25	15.1%
Premature	12	48 %
IUGR	7	28%
Jaundice	1	4 %
Stillbirth	1	4%
Asphyxia	4	16 %

Among 166 newborn babies; only 25(15.1%) had complications, those complication were 48% premature, 28% IUGR, 4% had jaundice & 4% still birth, remaining 16% had birth asphyxia

Discussion

Among 4175 admitted cases 182(4.35%) were diagnosed as pre-eclampsia /eclampsia with proportion of 162(3.88%), 16(0.38%), 4(0.09%) mild pre-eclampsia, severe pre-eclampsia and eclampsia respectively. Similar study done in Nigeria and Bheri Zonal Hospital (Nepal) found that the prevalence of severe pre-eclampsia was 3.3% and 23 (0.4%) respectively.[7,8] About the parity of women; 112(61.5%) were primi para, as in Lahor it was 60 %, which is similar finding of this study.[9]

Regarding the age of women, highest proportion of women (43.3%) belongs to age group 20-25 years, 35.4 % of women belong to age group 25-30years; 15.4 % belongs to age 30-35years; 3.8% belongs to under the age 20 years; 1.6 % belong to age 35-40 whereas least proportion (0.5%) belongs to above the age of 40 years. Mean age of women was 25.96±4.38 years. As study done in Nigeria, the mean age of the women was 24.5 +-. 2.9 years[7] which is the similar finding of this study. In regard to ethnicity, highest proportions (29.1%) of the women were Brahmin, 26.4% were Chhetri, 21.4%% Mongolian, 18.7% Newar and 4.4 % were others.

Most of 112(61.5%) were primipara, 74.2% of the women came to hospital in 37-42 weeks of gestation. As Ugwu, 49.4% were primigravida, and the commonest gestational age was 34-36 weeks.[7] Most of (98.4%) cases received antenatal care and 3(1.6%) were referred by other institution, those cases belonged to one severe pre-eclampsia and two eclampsia. In Nigeria 59(76.6%) received antenatal care at the study center while the remaining were referred cases.[7] This shows that the antenatal care was better in this study site.

Out of 162 mild pre-eclampsia, 99.4% woman's BP measured 4 hourly; liver and renal function tests done in 85.8%; antihypertensive drug used in 60.5%, CTG done in 52.5%, and kick chart maintained in 15.5%. Out of 16 severe pre-eclampsia cases, 87.5 % started IV drip with RL, antihypertensive drugs and MgSO4 given to 100% and 62.5% respectively; fetal condition assessed clinically in 100% and by CTG 93.8%, renal and liver function test was done in 93.8%, and platelet count in 87.5%. Out of 4 eclampsia cases, 100% kept in lateral position, cleared airway, given oxygen, started intravenous drips, treated with MgSO4, monitored blood pressure, treated with antihypertensive drugs, monitored urinary output by inserting indwelling catheter. As study done in Hariyana; MgSO4 was given to 95% patients as anticonvulsant and phenytoin in other 5 %.[10] According to Jha, 92% women had their fits controlled by MgSO4.[11, 12] Similarly 100% fetal condition was monitored by CTG, and 50% women's were monitored in ICU.

Out of 166 mild pre-eclampsia cases, 147(90.7%) were delivered and 15(9.3%) were discharged before delivery. About management in first stage of labour; 32% women's BP was measured half hourly , 13.6% women's urine output assessed hourly, 61.2% treated with antihypertensive drug, 15% women's labor was managed by using partograph properly, only 3.4%women's mental status was monitored. In the second and third stage labour management of mild pre-eclampsia cases; 18(12.2%) women's BP was measured, 63(42.9%) women's fetal heart was monitored, 83(56.5%) women's delivered baby within expected time, 145(98.6%) women were given oxytocin after delivery, 6(4.1%) had more than 500ml blood loss, 145(98.6%) women's BP was controlled after delivery that is diastolic blood pressure less than 90 mm Hg.

In the management of first stage of labor in severe pre-eclampsia and eclampsia; in all 19(100%) cases, BP measured half hourly, assessed urine output hourly, gave antihypertensive drug and monitored mental status of women, partograph used properly only in 10.5% cases. For second and third stage labor management; in 47.7% BP measured in every 15 minutes, 73.7% monitored FHS after every contraction, 36.8% were delivered within expected time, 94.7% got oxytocin, 94.7% had normal blood loss, in all cases BP was measured, and 73.7% had controlled BP after delivery.

MgSO4 was received by 50% of severe pre-eclampsia and 100% of eclampsia cases. Loading dose of MgSO4 4g IV and 5g IM in each buttocks with lignocain and 5g maintenance dose IM 4 hourly was given to 50% severe pre-eclampsia and all eclampsia cases. Patellar reflex assessment was done in 37.5% pre-eclampsia and 100% cases before giving MgSO4. Respiratory rate was measured in 31.3% severe pre-eclampsia and all eclampsia cases; urine output was measured 50% in severe pre-eclampsia and 100% in eclampsia. Similar finding was seen on study done by Chalise in Bheri Zonal Hospital and Mid Western Regional Hospital where 100 % cases of severe –pre-eclampsia and eclampsia were managed with MgSO4; 25% in Dang Sub Regional Hospital, and 50% in Pyuthan District Hospital.[8]

Out of 166 deliveries; 76(45.7%) gave birth by SVD, 1(0.6%) by vaginal breech delivery, 85(51.2%) by C/S. This finding is similar to study done in Thapathali maternity hospital that is 55.31% by C/S [13], and 4(2.4%) by means of vacuum extraction. In mild pre-eclampsia (147); 75(51%) were delivered by SVD, 1(0.6%) by vaginal breech delivery, 67(45.5%) by C/S and 4(2.7%) by means of vacuum extraction. In severe pre-eclampsia, 94.4% were delivered by C/S and 6.6% by SVD. In eclampsia(4), 100% were delivered by C/S. Using ANOVA F test at 95% confidence level P value was found to be 0.00 which is less than significance level 0.05 that indicates there is significant difference between diagnosis and mode of delivery.

Among 166 deliveries, only12 (7.22%) had maternal complications. Out of 12, 1(8.33%) abruption placenta, 7(58.33%) PPH, 1(8.33%) cervical tear, 1(8.33%) retained placenta and 2(16.66%) puerperal sepsis. Similar study was done in Hariyana India, there was high incidence of maternal complications like PPH (31%), abruption placentae (11%), renal dysfunction (8%), pulmonary edema (8%), pulmonary embolism (4%), HELLP syndrome (2%) and DIC (2%). Maternal mortality was 8 %. [10]

Among 166 deliveries, only 1(0.6%) was stillbirth. In mild pre-eclampsia, majority 98.8% babies had 7-10 Apgar score, while in severe pre-eclampsia and eclampsia, 100% had Apgar score 7-10 respectively. As the Tabassum, majority of the patients 33 and 39 out of 50 had more than 5 APGAR score [12]. In regard to birth weight, 50% baby of eclampsia cases, 66.6% baby of severe pre eclampsia cases and only 16.3% baby of mild pre eclampsia cases have low birth weight that is less than 2.5 kg. Likewise, only 2% had birth weight

more than 4kg in mild pre eclampsia. Preterm babies were 6 i.e. 46.15%, full term babies with good Apgar score were 3 i.e. 23.08% in the Karachi.[14] Using Pearson chi-square test at 95% confidence level P value was 0.00 that is less than significance level 0.05 which indicates that there is significant difference between diagnosis and birth weight.

Among 166 newborn babies; only 25(15.1%) had complications, those complication were 12(48%) premature, 7(28%) IUGR, 1(4%) have jaundice, 1(4%) were still birth, and 4(16%) had birth asphyxia. As study done in Hariyana India, perinatal complications were high 71.43% low birth weight, 66% preterm delivery, 52.4% birth asphyxia and 28.57% still born.[10] Perinatal mortality in eclampsia was 4 out of 13 i.e. 30.77%.[14] .

Conclusion

Among 4.35% diagnosed pre-eclampsia /eclampsia cases, the proportion was 3.88%, 0.38%, 0.09% of mild pre-eclampsia, severe pre-eclampsia and eclampsia respectively. Antihypertensive drug was used in more than half mild pre-eclampsia, all severe preeclampsia and eclampsia cases. MgSo4 was used in more than half severe pre-eclampsia cases and in all eclampsia cases. There was no life threatening maternal and neonatal complications seen in majority cases.

The prevalence of pre eclampsia/eclapmsia is very low in the study site in comparison to national figure. The maternal and neonatal complications in this study was very low than other similar study because of better antenatal service and early diagnosis of pre-eclampsia in less severe stage and prompt management of those cases.

Conflict of interest: None Declared.

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