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RESEARCH ARTICLE

FETO-MATERNAL OUTCOMES IN HYPERTENSIVE DISORDERS OF PREGNANCY IN A TERTIARY CARE HOSPITAL: A RETROSPECTIVE STUDY

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Abstract

Introduction: Hypertensive disorders are the most common Medical disorders encountered during pregnancy occurs in approximately 7% to 10% of all pregnancies. HDP are associated with fetal growth restriction, perinatal asphyxia, iatrogenic prematurity, stillbirths, preterm delivery, perinatal death, neonatal mortality and affects vital maternal organ system such as renal, hepatic, cardiorespiratory, fetoplacental and hematologic.

Methods: Hospital based descriptive cross-sectional retrospective study was conducted to find the incidence and evaluate the foeto-maternal outcome in 1462 women with HDP who delivered in our hospital.

Result: 151 (10.32%) were diagnosed to have HDP of which 8 (5.29%) had eclampsia, 7 (4.63%) had chronic hypertension, 42 (27.8%) had mild pre-eclampsia, 25 (16.55%) had severe eclampsia and 69 (45.69%) had gestational hypertension. 70.19% belonged to the age group of 18 to 27 years. Incidence was almost equal in multigravida and primigravida i.e. 51.65% and 48.34% respectively. Patients who delivered vaginally were 54.96% while remaining were delivered out by LSCS mostly due to foetal distress. 82.11% (124/151) presented with no maternal complication. 17.88% cases had significant morbidity. Most complication were seen in the eclampsia group. Out of 151 deliveries, 81 (53.64%) had no adverse fetal complication. 6 had IUD/Stillbirth. Prematurity was seen in 62.91% babies while 50% were LBW babies. 38.46% needed ICU admission out of which 13 required ventilator support.

Conclusion: HDP is one of the major health problems seen in pregnancy & is associated with a huge burden of maternal and perinatal morbidity and mortality.

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Introduction:-

Hypertensive disorders are the most common medical disorders encountered during pregnancy, occurring in approximately 7% to 10% of all pregnancies.¹ Hypertensive disorders in pregnancy (HDP) are the spectrum of disorders ranging from already existing chronic hypertension in index pregnancy to complex multisystem disorder like preeclampsia leading to complications like eclampsia, HELLP syndrome, acute renal failure, pulmonary

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oedema, stroke and left ventricular failure. Among all maternal deaths 19 % deaths are due to hypertension in pregnancy (WHO 2014) despite the phenomenal numbers of mothers seeking hospital-based delivery care.²

New onset hypertension (BP >140/90 mmHg) after 20 weeks of pregnancy without proteinuria on 2 separate occasions is known as gestational hypertension which is followed by signs and symptoms of pre-eclampsia (headache, blurring of vision, vomiting, epigastric pain etc) almost half the time. Pre-eclampsia is gestational hypertension with proteinuria. It is considered to be severe in presence of one or more end-organ dysfunctions. When BP >140/90 mmHg even before 20 weeks of pregnancy or persists even 12 weeks postpartum it is considered chronic hypertension. Neurologic involvement in the form of GTCS is termed as eclampsia. While, HELLP syndrome is an acronym for haemolysis, elevated liver enzymes and low platelets. It is a severe form of pre-eclampsia indicating hepatocellular injury. Terms like pregnancy induced hypertension and pregnancy associated hypertension are no longer used.

Among other hypertensive disorders, pre-eclampsia and eclampsia are considered most dangerous. Incidence of preeclampsia was found to be 10.3% (NER 2013) and that of eclampsia was 1.9% out of which more than 50% of the cases were antepartum, and approximately 13% of the cases occurred post-partum. Maternal Mortality attributed to eclampsia is approximately 4-6 %. WHO estimates incidence of preeclampsia to be seven times higher in developing countries (2.8% of live births) than in developed countries (0.4%).³

HDP are associated with fetal growth restriction, perinatal asphyxia, iatrogenic prematurity, stillbirths, preterm delivery, perinatal death, neonatal mortality and affects vital maternal organ system such as renal, hepatic, cardiorespiratory, feto-placental and hematologic.⁴ The primary objective of HDP treatment is to prevent potential maternal complications and death whose importance to the foetus is dubious.

Prevention of any disease process requires availability of methods for prediction of those at high risk for the disorder. Although numerous clinical and biochemical tests have been proposed for prediction or early detection of pre-eclampsia, most remain unrealistic for general use in most developing countries. At present, there is not a single reliable and cost-effective screening test for preeclampsia which can be recommended for use in most developing countries.⁵ Due to myths and misconceptions in pregnancy, challenges in transport facilities, low socioeconomic status, lack of easy and expert antenatal care requiring multidisciplinary approach, lack of accurate prediction methods and scarcity of high dependency units (HDU) there is an unmet need in recognizing and managing HDP especially in low and middle-income group countries.

Keeping all above stated facts in mind, this study was conducted to find the incidence and evaluate the foeto-maternal outcome in women with HDP who delivered in our hospital. Although many such studies have been published earlier and our study is just an addition to the existing literature but for us it helped to set up a protocol to prevent such untoward maternal and fetal consequences.

Method and Material:-

A hospital based descriptive cross-sectional retrospective study was conducted in Department of Obstetrics and Gynaecology of a tertiary care hospital in Jaipur, by evaluating the records of women who had delivered from January 2020 to December 2020. This included 1462 pregnant females. All women presenting with HDP who delivered in the hospital and whose records were complete were included in the study. The exclusion criteria included woman with multifetal gestation, known fetal anomalies, who were transferred to other hospital after being admitted to the study hospital, lost or incomplete data or died on arrival before adequate diagnosis was made.

The study group were divided into 5 groups namely, Gestational hypertension, Mild pre-eclampsia (PE), Severe pre-eclampsia, Eclampsia and Chronic hypertension (CH) based on their clinical presentation and investigations at admission and during course of labour. The maternal and fetal parameters studied were age, gestational age, parity, area of residence, mode of delivery, birth weight and admission in NICU. Outcomes were detailed in mother on basis of ICU Admission, ventilator support, development of ARDS (acute respiratory distress syndrome), CHF (congestive heart failure), pulmonary oedema, PPH (post-partum haemorrhage), DIC (disseminates intravascular coagulopathy), HELLP syndrome (haemolysis, elevated liver enzymes, low platelet count), Abruption. Intra cranial haemorrhage and death while that in baby on basis of delivery outcome (Intra uterine fetal demise, Stillbirth), IUGR (intra-uterine growth retardation), Apgar score, need for resuscitation and death.

Data collection was made by the pretested check lists to document all the parameters properly. Data was entered in micro soft excel worksheet and appropriate test were used to find the significant association. P value <0.05 was considered statistically significant.

Result and Observation:-

Out of 1462 patients who delivered in our hospital during the given time period, 151 (10.32%) were diagnosed to have hypertensive disorders of pregnancies.

Out of 151 patients who were diagnosed with the disorder 8 (5.29%) had eclampsia, 7 (4.63%) had chronic hypertension, 42 (27.8%) had mild pre-eclampsia, 25 (16.55%) had severe eclampsia and 69 (45.69%) had gestational hypertension. (Fig 1)

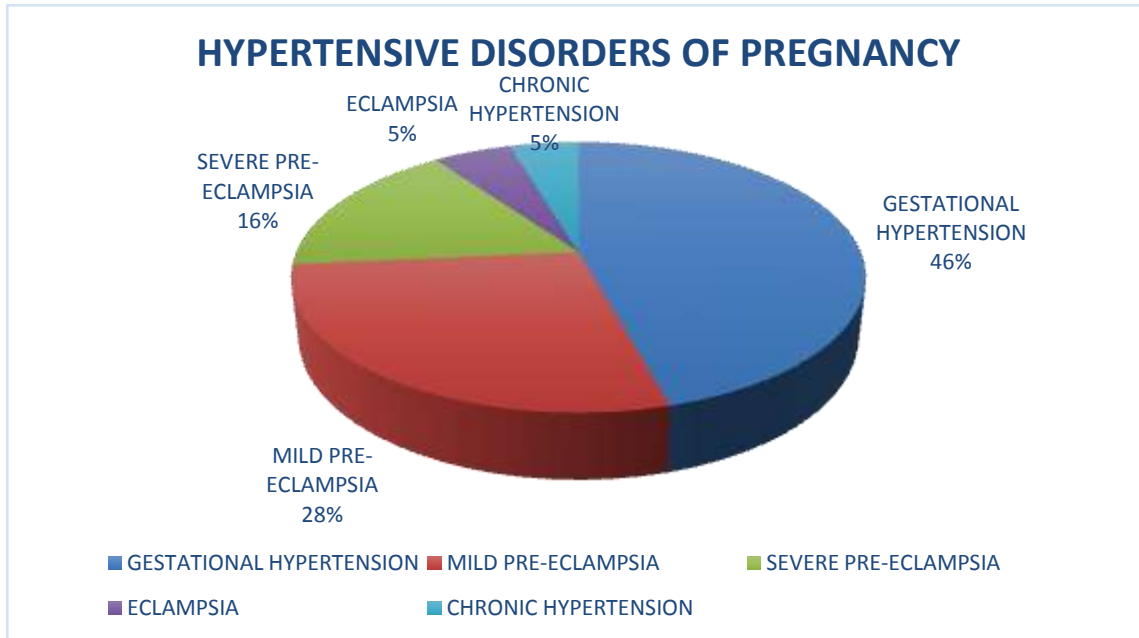


Fig 1:- Frequency of Hypertensive disorders of pregnancy.

Majority of the patients with HDP (70.19%) belonged to the age group of 18 to 27 years while the least belonged to >37 years of age. This difference in the distribution according to age within the five groups of hypertensive disorders of pregnancy was statistically insignificant. The hypertensive disorders were almost equal in both multigravida and primigravida i.e. 51.65% and 48.34% respectively. On comparing the various groups of hypertension, the difference in parity was not statistically significant. 61.58% of the patients belonged to urban household and 94.70% patients were Hindu. Out of 151 patients with hypertensive disorders 62 were induced. Many were premature and were induced due to uncontrolled BP even on medications or associated co-factors. Prematurity was seen in 62.91% babies. Most of the preterm deliveries were in the eclampsia group, followed by severe pre-eclampsia and gestational hypertension group. Most of the women in our study, who had gestational hypertension or mild pre-eclampsia, carried their pregnancy till term. Patients who delivered vaginally were 54.96% while remaining were delivered out by caesarean section either elective or emergency. Emergency sections were more common in HDP due to either fetal distress, meconium stained liquor, uncontrolled BP, Non progression of labour or failure of induction. Most common indication was fetal distress. The difference in the number of women who had vaginal deliveries and caesarean deliveries was statistically insignificant in hypertensive patients. 50% had babies who were low birth weight at the time of delivery while 30.7% were >2.5kg at birth. 61.53% of babies didn't require NICU admission while others need NICU support due to resuscitation at time of delivery, low APGAR or due to being growth restricted.

Table 1:- Maternal characteristics of patient presenting with HDP.

S.No	MATERNAL CHARACTERISTICS	No.	Percentage (%)
AGE			

1.	18- 27 years	106	70.19%
2.	28-37 years	42	27.81%
3.	> 37 years	3	1.98%
PARITY			
1.	Primi	73	48.34%
2.	Multi	78	51.65%
AREA OF RESIDENCE			
1.	Rural	58	38.41%
2.	Urban	93	61.58%
RELIGION			
1.	Hindu	143	94.70%
2.	Muslim	7	4.63%
3.	Others	1	0.66%
GESTATIONAL AGE			
1.	Preterm <37 weeks	95	62.91%
2.	Term >37 weeks	56	37.08%
MODE OF DELIVERY			
1.	Vaginal delivery	83	54.96%
2.	LSCS	68	45.03%

Table 2:- Foetal characteristics in patients presenting with HDP.

S.No	FOETAL CHARACTERISTICS	No.	Percentage (%)
BIRTH WEIGHT			
1.	VLBW (<1500 gm)	20	19.2%
2.	LBW (1500-2500 gm)	52	50%
3.	>2500 gm	32	30.7%
NICU ADMISSION			
1.	Yes	40	38.46%
2.	No	64	61.53%

On analysing various maternal outcome in these patients (Table 3), 82.11% (124/151) reported cases presented with no complication. 17.88% cases had significant morbidity. There were no major complications in women with gestational hypertension, mild pre-eclampsia and chronic hypertension. Most complications were seen in patients who were diagnosed with severe pre-eclampsia and eclampsia. This difference was statistically significant with p value of <0.05. Most ICU admissions were seen in eclampsia group in which 6 out of 8 patients were admitted there out of which 4 were kept on ventilator support. There was 1 maternal death noted in same group whose likely cause was intra-cranial haemorrhage due to head injury sustained during seizure. PPH was the most common complication seen in HDP. All patients with severe pre-eclampsia were given prophylactic antenatal magnesium sulphate. Out of 25 patients with severe pre-eclampsia only 1 had eclamptic fit while remaining 7 presented with eclampsia at time of admission.

Anaemia and IHCP (intra-hepatic cholestasis of pregnancy) were commonly associated co morbid factors in these patients. 3 out of 151 patients with HDP had heart disease while, 1 patient had SLE. Most patients developed eclampsia and severe pre-eclampsia during third trimester.

Table 3:- Foeto- Maternal Outcomes in patients presenting with HDP.

S. No	OUTCOME	GEST. HTN	MILD PRE-ELAMPSIA	SEVERE PRE-ELAMPSIA	ECLAMPSIA	CHRONIC HTN	TOTAL
MATERNAL							
1.	Normal	67	37	11	2	7	124 (82.11%)
2.	ICU	0	0	4	6	0	10

	admission						(6.62%)
3.	Ventilator	0	0	1	4	0	5 (3.31%)
4.	ARF	0	0	0	2	0	2 (1.32%)
5.	DIC	0	0	1	1	0	2 (1.32%)
6.	HELLP	0	1	2	3	0	6 (3.97%)
7.	PPH	1	2	5	3	1	12 (7.94%)
8.	CHF	0	0	0	0	0	0
9.	ARDS	0	0	0	0	0	0
10.	Maternal death	0	0	0	1	0	1 (0.66%)
11.	Intra- cranial haemorrhage	0	0	0	1	0	1 (0.66%)
12.	Abruption	1	2	2	1	0	6 (3.97%)
13.	Others	0	0	0	0	0	0
FOETAL							
1.	Normal	50	15	8	1	7	81 (53.64%)
2.	IUD	1	1	2	1	0	5 (3.31%)
3.	Stillbirth	0	0	0	1	0	1 (0.66%)
4.	Ventilator/ Resuscitation	0	4	6	6	0	16 (10.59%)
5.	Neonatal death	0	1	1	1	0	3 (1.98%)
6.	Low APGAR at 1 min	2	5	8	6	0	21 (13.9%)
7.	Low APGAR at 5 min	1	3	6	4	0	14 (9.27%)
8.	IUGR	10	6	15	6	1	38 (25.16%)
9.	Others	0	0	0	0	0	0

Out of 151 deliveries, 81 (53.64%) had no adverse fetal complication. 6 had IUD/Stillbirth. 38.46% needed ICU admission out of which 13 required ventilator support. There were 3 neonatal death due to respiratory distress and sepsis. Poor neonatal outcome in terms of low APGAR, IUGR, LBW, higher NICU admissions and need for ventilator for baby was much higher in the women with eclampsia and severe pre-eclampsia. Most preterm were noted in these groups. Better outcomes were noted in gestational and chronic hypertension. This difference was statistically significant. . There was no perinatal death reported among those delivered by caesarean section. Better fetomaternal outcomes were seen in patients who had regular ANC visits.

Dicussion:-

Hypertensive disorders of pregnancy are considered to be a major worldwide health problem causing an increased risk of perinatal and maternal morbidity and mortality. A number of different complex mechanisms involving the lipid and protein oxidation, altered nitric oxide production and adhesion molecules and placental glycoproteins playing role in trophoblastic–endothelial dysfunction may be suggested to be associated with the etiopathogenesis. The spectrum of the disease ranges from mildly elevated blood pressure measurements with minimal clinical significance to severe hypertension and multiorgan dysfunction. In our study, 10.32% females had HDP. Prevalence

of hypertensive disorder of pregnancy is different according to the geographic regions of the world and ranges from 1.5% in Sweden to 7.5% in Brazil. In India the prevalence of HDP has been reported to be 6-8.^[6] it was 6.92% in a study conducted by Sharma et al.^[7] These differences can be due to racial reasons, socioeconomic status and some other demographic parameters such as age and parity. Incidence of eclampsia in our study was 4.63%. Overall incidence of pre-eclampsia in Sharma et al study was 3.47% and that of eclampsia was 2.47%.^[7] Prakash et al. reported the incidence of pre-eclampsia to be 5.8%.^[8] 70.19% patients belonged to the age group of 18-27 years in our study. Many authors have identified young age as a risk factor for hypertension during pregnancy.^[9,10] In our study primigravida and multi had almost similar incidence. This was seen in study by Sharma et al. ^[7] Although literature suggest nulliparity as risk factor.

61.58% were belonging from urban household and 94.70% were hindu by religion in our study. This could be justified by the area the hospital majorly catered. 62.91% of the patients were <37 weeks at the time of delivery. This was due to either spontaneous onset of labour but majorly as pains were induced in most of the patients. Vaginal delivery was seen 54.96% and LSCS in 45.03% cases in our study with most common indication being fetal distress. Delivery route was vaginal in 105 patients (41.2%) and 150 patients (58.8%) underwent cesarean section with most frequent indication to be fetal distress in 69 cases (46%) in a study conducted by Yücesoy G et al.^[10]

Maternal complications in our study had similar findings to the study done by Sharma et al. they concluded that 81.6% mothers had normal outcome while ICU admission were in 5.7%, ARF and DIC in 2.4%, maternal mortality and intra-cranial haemorrhage in 0.9%.^[7] Incidence for PPH was lower in their study. Devi and Uday concluded incidence of HDP as 11.7% which was similar to our study. Ascites was observed in 2.8%, pleural effusion in 1.2%, HELLP syndrome in 0.8%, cortical venous thrombosis in 2.8% and duodenal perforation in one patient.^[11]

Fetal complications associated with HDP in our study were IUGR, preterm delivery, non-assuring fetal heart patterns during labour, low APGAR scores at birth and need of NICU admission and ventilator. In study by Sharma et al they concluded that 27.5% babies had normal outcome while IUD/ Stillbirth were seen in 13.7%, NICU admission in 41.2%, 6.8% needed ventilator support, neonatal deaths were 3.2%, low APGAR in 30.7% and IUGR was seen in 41.2% cases.^[7] The only cure for eclampsia and pre-eclampsia is delivery. The timing regarding this has to be decided by assessing the risk of continuing pregnancy and benefits of delivering. The decision making process should include parents and a senior obstetrician who discuss all risk and benefits in detail. There are not much studies which focus on optimal timing and method of delivery in such patients. According to recommendations women with HDP, vaginal delivery is preferred until there is ant obstetric indication for LSCS. Caesarean may be preferred in patients with IUGR, oligohydromnios, any Doppler changes or severe uncontrolled BP even after medications. Steroid coverage is done in preterm cases. In cases of unripe cervix, cervical ripening maybe helpful. The stage should be actively managed and ergometrines should be avoided. Patients should be counselled regarding long term prognosis and recurrence of disease in future pregnancies. Women with pre-eclampsia have a three- to four- fold increased risk of developing chronic hypertension and an approximately two-fold increased risk of ischaemic heart disease, stroke and venous thromboembolism.^[12]

Conclusion:-

Hypertensive disorders of pregnancy is one of the major health problem seen in pregnancy as its associated with huge burden of maternal and perinatal morbidity and mortality, more so in eclampsia and severe pre-eclampsia group as compared to gestational hypertension, chronic hypertension and mild pre-eclampsia.

Therefore, timely diagnosis and provision of specialized antenatal maternal care could reduce the impacts of such complications. Perinatal and maternal mortality are closely related and interventions to prevent maternal complications will benefit perinatal outcome as well. Early diagnosis and treatment through regular antenatal check-up is a key factor in prevention. Routine screening based on measurement of BP among all pregnant women should be practised as recommended by WHO and where resources are available, it is desirable to do urinary protein analysis at every antenatal visit as a complement to routine blood pressure measurement.

References:-

1. Lippincott W & Wilkins. Hypertensive disorders in pregnancy. In: Barton JR, et al. (Eds.), Manual of Obstetrics. (8th edn) Wolters Kluwer Health, Philadelphia, USA. 2014;pp.183–195.

2. Abalos E, Cuesta C, Carroli G, Qureshi Z, Widmer M, Vogel JP, et al. Pre-eclampsia, eclampsia and adverse maternal and perinatal outcomes: A secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG*. 2014; 121(Suppl 1):14–24
3. World Health Organisation. The world health report 2005– Make every mother and child count. World Health Organization, Geneva. 2005.
4. Kassebaum NJ, Bertozzi-Villa A, Coggeshall MS et al. Global, regional, and national levels and causes of maternal mortality during 1990–e2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2014; 384(9947):980–1004. [https://doi.org/10.1016/S0140-6736\(14\)60696-6](https://doi.org/10.1016/S0140-6736(14)60696-6) PMID: 24797575.
5. Wagner LK. Diagnosis and management of preeclampsia. *American Family Physician*. 2004;70(12):2317–2324.
6. Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. *Am J Obstet Gynecol*. 2000;183(1):S1–S22.
7. Sharma C, Gupta S, Tyagi M, et al. Maternal & perinatal outcome in hypertensive disorders of pregnancy in a tertiary care hospital in northern india. *ObstetGynecol Int J*. 2017;6(6):170–174. DOI: 10.15406/ogij.2017.06.00229
8. Prakash J, Pandey LK, Singh AK, et al. Hypertension in pregnancy: hospital based study. *J Assoc Physicians India*. 2006;54:273–278
9. Tavassoli F, Ghasemi M, Ghomian N, et al. Maternal and perinatal outcome in nulliparous women complicated with pregnancy hypertension *J Pak Med Assoc*. 2010;60(9):707–710.
10. Yücesoy G, Ozkan S, Bodur H, et al. Maternal and perinatal outcome in pregnancies complicated with hypertensive disorder of pregnancy: a seven year experience of a tertiary care center. *Arch Gynecol Obstet*. 2005;273(1):43–49.
11. Fernando Arias, AmarnathBhide, Arulkumaran S, et al. *Practical guide to High Risk pregnancy and Delivery* (3rd edn), Elsevier, New Delhi, India. 2008;pp.584
12. Bellamy L, Casas JP, Hingorani AD & Williams DJ. Pre-eclampsia and risk of cardiovascular disease and cancer in later life: systematic review and meta-analysis. *BMJ* 2007; 335: 974.