

Ocular Changes in Hypertensive Disorders in Pregnancy in a Tertiary Care Centre

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Abstract: ***Aim:** To evaluate ocular changes in Hypertensive disorders in pregnancy (Gestational Hypertension, Pre - eclampsia, Eclampsia and Chronic hypertension). **Study Design:** Retrospective study. **Period of Study:** 1 year. **Materials and Methods:** In a period of 1 year from April 2023 to March 2024, a total 92 cases have been encountered with Hypertensive Disorders in Pregnancy (HDP) in our college. Details like parity, age, gestational age, systemic symptoms and ocular signs and symptoms were noted and clinically evaluated. Fundoscopy was done at the bedside of the patient. **Conclusion:** Severe cases of HDP indicates higher ocular changes. Fundal examination is important to assess severity of the disease i. e progression of retinal changes correlates with the severity of the disease and also perinatal outcome.*

Keywords: Gestational HTN, Preeclampsia, Eclampsia, chronic HTN, Ocular, Fundus.

1. Introduction

Pregnancy is associated with many physiological and pathological changes. HDP i. e. Hypertensive disorders in pregnancy, which was earlier called as Pregnancy induced hypertension, is one of the most common medical complications of pregnancy affecting 7 - 15% of all pregnancies.²

Gestational Hypertension i. e. Hypertension developing after 20wks of pregnancy in the absence of history of hypertension, is diagnosed if BP reading is more than 140/90mm HG on 2 occasions at least 4hrs apart. It can be associated with edema and or proteinuria. When there is proteinuria or presence of any of the severe features of pre - eclampsia, it is termed as Pre - Eclampsia; if associated with seizures called as Eclampsia. **HDP is a multi - system disease which effects liver, kidney, eyes, cardiovascular, neurologic and hemopoietic system.**

In India, the incidence of eclampsia ranges from 0.17 to 3.7% and maternal mortality from 2.2 to 23% of all women with eclampsia.^{1,3,4} Undertreated eclampsia accounts for 75% of all maternal deaths and causes irreversible blindness in 1 - 3% of affected cases.⁵ Blurred vision, diplopia, photopsia, and scotoma are some of the common symptoms which are observed in cases of HDP.

Pathophysiology is through vascular endothelial damage which causes vasospasm, transudation of plasma, ischemic and thrombotic events.

Changes in the eye during pregnancy are common. Most of these are benign physiological responses to metabolic, hormonal, and immunological changes to adapt the gestational product, there are some variations in the retinal vasculature that can be used as a good guide to be assessing the severity of hypertension and for differentiating between chronic hypertension and HDP.⁶

Blood vessels of eyes can be visualized through the technique of fundoscopy. It is not only useful in assessing the condition of the eye and the effects of high blood pressure on the blood vessels of the retina but also to understand the effect of high blood pressure on other organs of the body including placental circulation and foetal health.⁷

Direct evidence of vasoconstriction may be obtained by ophthalmic examination. **The delicate vessels in the eye become narrowed or damaged. Fundal examination during dilated pupils can reveal or indicates HDP severity.** Vasospasm, haemorrhage and exudates and papilledema manifest as visual disturbances.

Examination of optic fundi in patients with gestational hypertension without proteinuria is also important because it may suggest the presence of chronic hypertensive disease independent of pregnancy.

- Mild pre - eclampsia usually has a normal fundoscopic examination.
- Visual disturbances like blurring of vision are common in severe pre - eclampsia.
- Retinal artery and venular calibre are decreased in women with pre - eclampsia. These changes along with visual cortex involvement can cause scotoma, blurred vision or diplopia, which is common with severe pre - eclampsia and eclampsia.
- Papilledema is not a common finding in pre - eclampsia, and it suggests the possibility of brain tumour, causing an increase ICP & secondary hypertension.
- Presence of haemorrhage, exudates or extensive arteriolar changes suggest chronic hypertension.
- In presence of blindness, fundoscopy is important to diagnose retinal detachment.
- Blindness can also occur following eclamptic fit. Blindness is rare with pre - eclampsia alone, but it complicates up to 15% of women with eclampsia.
- In retina, ischemia, infarction, or serous detachment may occur. Serous retinal detachment is usually unilateral & seldom causing total visual loss.
- Asymptomatic serous retinal detachment is relatively common with pre - eclampsia.

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Aim

To evaluate ocular changes in Hypertensive disorders in pregnancy (gestational hypertension, pre - eclampsia, eclampsia and chronic hypertension).

2. Materials and Methods

In a period of 1 year from April 2024 to March 2024 total 92 cases in GEMS hospital have been encountered with Hypertensive disorders in pregnancy. Data including details like parity, age, gestational age, systemic symptoms and ocular signs and symptoms were noted and clinically evaluated. Fundoscopy was done at the bedside of the patient.

Study Design: Retrospective study.

Period of Study: 1 year (from April 2023 to March 24)

3. Results

Out of 1200 total cases 92 cases of pregnant women found to be affected with HDP. Incidence of 7.6% is noted.

The subjects are distributed according to the age, period of gestation, parity, proteinuria, ocular and systemic symptoms and fundal changes.

Age in Years	Number
<=20	2 (2.1%)
21 - 25	5 (5.4%)
26 - 30	31 (33.6%)
31 - 35	28 (30.4%)
36 - 40	26 (28.2%)

Comparison:

Age group	Fundal changes	
	No	Yes
<=20	1 (1.1%)	1 (3.4%)
21 - 25	4 (6.3%)	1 (3.4%)
26 - 30	25 (39.6%)	6 (20.6%)
31 - 35	19 (30.1%)	9 (31%)
36 - 40	4 (22.2%)	12 (41.3%)

Period of gestation in weeks	number
<28wks	16 (17.3%)
28 - 34wks	51 (55.4%)
34 - 37wks	18 (19.5%)
>=37wks	7 (7.6%)

Comparison

POG	Fundal changes	
	No	Yes
<28wks	11 (18.3%)	5 (15.6%)
28 - 34wks	34 (56.6%)	17 (53.1%)
34 - 37wks	10 (16.6%)	8 (25.0%)
>=37wks	5 (8.3%)	2 (6.25%)

Parity	number
Primigravida	41 (44.5%)
Multigravida	51 (55.4%)

Comparison

Parity	Fundal changes	
	No	Yes
Primigravida	32 (51.6%)	9 (30.0%)
Multigravida	30 (48.3%)	21 (70.0%)

Comparison

Type of Complication	number
G. HTN	14 (15.2%)
Eclampsia	7 (7.6%)
Preeclampsia	62 (67.3%)
Chronic HTN	9 (9.7%)

Proteinuria	Fundal changes	
	No	Yes
G. HTN	9 (16.6%)	5 (13.1%)
Eclampsia	1 (1.8%)	6 (15.7%)
Preeclampsia	40 (74.0%)	22 (57.8%)
Chronic HTN	4 (7.4%)	5 (13.1%)

Proteinuria	Number
+	45 (48.9%)
++	18 (19.5%)
+++	29 (31.5%)

Comparison

Proteinuria	Fundal changes	
	No	Yes
+	45 (67.1%)	4 (16.0%)
++	12 (17.9%)	6 (24.0%)
+++	10 (14.9%)	15 (60.0%)

Ocular symptoms	number
Ocular pain	6 (6.5%)
Blurring of vision	19 (20.6%)
Diplopia	9 (9.7%)
Headache	1 (1.08%)
Photopsia	12 (13.0%)
Intermittent loss of vision	5 (5.4%)
Scotoma	1 (1.08%)
None	58 (63.0%)

Systemic symptoms	number
Epigastric pain	4 (4.3%)
Headache	10 (10.8%)
Nausea	4 (4.3%)
None	74 (80.4%)

Fundal changes	number
Arteriolar narrowing	16 (17.3%)
Arteriovenous crossing	14 (15.2%)
Retinal hemorrhages	6 (6.5%)
Cotton wool spots	4 (4.3%)
Papilledema	3 (3.2%)
Choroidal infarcts	1 (1.08%)
None	60 (65.2%)

4. Discussion

- 1) In this extreme northeastern district of Andhra Pradesh, Srikakulam we found that 26 - 30years age group is most affected with 33.6% of HDP.
- 2) But fundal changes were found to be most common with the age group 36 - 40 years.

- 3) GA commonly affected with ocular changes is 28 - 34weeks (i. e.53.1%).
- 4) Most of the cases in our study are the referral cases from different hospitals with uncontrolled HTN for management.
- 5) At 28 - 34weeks POG about 55.4% had signs of fundal changes with 53.1%. And also, they had other uterine doppler changes which has landed into termination of pregnancy. It could be due to irregular antenatal care.
- 6) Multigravida (55.4%) are the most common antenatal who are affected with the HDP and ocular changes with 70.0%. Primi gravida with 30%.
- 7) Preeclampsia cases were more commonly found with mild fundal changes with 57.8%.
- 8) Proteinuria 3 (+) are more commonly affected with fundal changes with 60%.
- 9) Ocular changes were observed of which blurring of vision is seen in 20.6% of them.
- 10) Most common systemic symptom associated with ocular changes is headache (10.8%) and epigastric pain (4.3%) and nausea.
- 11) Arteriolar narrowing (17.3%) and arteriovenous crossing (15.2%) are the most observed retinal changes.

5. Conclusion

Assessing the ocular changes in early stages may detect disease progression in the other organs in early stage and prevent emergency admissions with HDP and termination of pregnancy even with preterm deliveries by giving appropriate treatment.

So ocular changes among pregnant women with pre - eclampsia and eclampsia is very important for obstetricians to know various ocular conditions associated with HDP and routine fundal examinations is needed in all cases for better foetal and maternal outcome.

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