



FUNDUS FINDINGS IN PATIENTS OF PREGNANCY INDUCED HYPERTENSION

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ABSTRACT

Purpose - to study the fundus findings in patients of pregnancy induced hypertension. **Methods**- This was a prospective observational study that involved 100 eyes of 50 patients with pregnancy induced hypertension complaining of diminution of vision. Complete ophthalmic examination was done in diffuse light followed by direct ophthalmoscopic examination and optical coherence tomography. **Results**-There were 50 females included in the study .Fundus findings in patients of pregnancy induced hypertension include arteriolar narrowing in all the patients followed by cotton wool spots in 86% patients, flame shaped haemorrhages in 62% patients, hard exudates in 58% patients, disc edema in 56%patients and disc haemorrhage in 12% patients. Optical coherence tomography findings included macular edema (central macular thickness > 300 μm), irregularly reflective regions, retinal nerve fiber layer thickening, subretinal fluid (SRF), intraretinal fluid, and intraretinal hyperreflective dots. **Conclusion**-All the patients with pregnancy induced hypertension who complained of poor vision had fundus findings like arteriolar narrowing, cotton wool spots, hard exudates, flame shaped haemorrhages, disc edema and disc haemorrhage. OCT findings include macular edema, retinal nerve fiber layer thickening, subretinal fluid and intraretinal fluid.

KEYWORDS : Pregnancy induced hypertension, Cotton wool spots, Hard exudates, Disc edema

INTRODUCTION

Preeclampsia is a hypertensive disorder in pregnancy that occurs in the absence of other causes of elevated blood pressure (140/90 mmHg, or a rise of 30 mmHg of systolic pressure, or a rise of 15 mmHg of diastolic pressure), taken on two occasions after rest, in combination with generalized edema and/or proteinuria Preeclampsia is one of the most common medical problem in pregnancy, affecting 7-10% of all pregnancies^[1]. Ocular involvement in Preeclampsia is common and the occurrence rate varies from 30-100% in different studies^[2]. Pregnancy induced hypertension is characterized by hypertension without proteinuria and edema. Preeclampsia is characterized by hypertension, proteinuria, and generalized edema^[3]. When preeclampsia progresses and convulsions develop, the condition is termed as eclampsia^[3-5]. In the eye the retina is a unique site where the vasculature in the human body is visualized directly with the help of ophthalmoscope. it gives a reasonable idea of the state of placental circulation and fetal wellbeing. Fetal and maternal complication can be avoided if PIH is detected early. Since, termination of pregnancy is indicated in severe hypertensive retinopathy^[6]. Evaluation of fundus is crucial in all patients of PIH. Fundoscopic findings in PIH include arteriovenous crossing changes, hemorrhages, exudates in retina, exudative retinal detachment, and choroidal infarcts^[7]. Cortical blindness is one of the important causes of blindness in toxemia of pregnancy^[8].

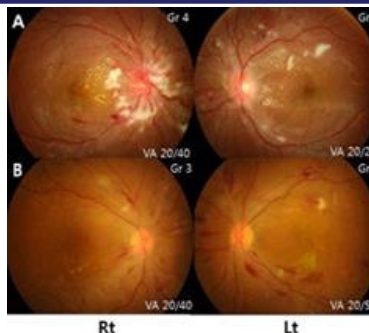


Figure 1 : Fundus findings in pregnancy induced hypertension

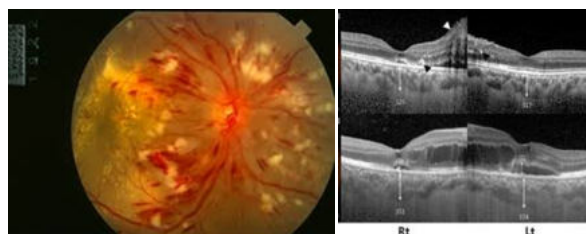


Figure 2: OCT findings in pregnancy induced hypertension

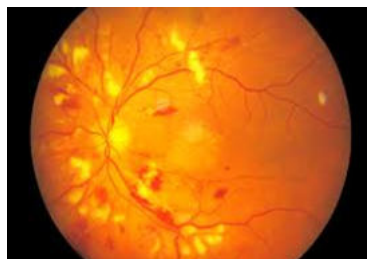
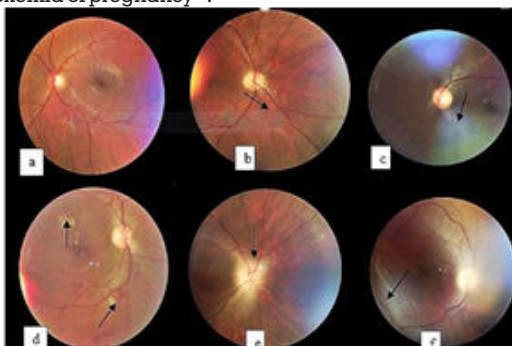


Figure 3: Fundus picture of severe preeclampsia



MATERIALS AND METHODS:

This was a prospective observational study that involved 100 eyes of 50 female patients with pregnancy induced

hypertension complaining of diminution of vision. Patients were recruited from the OPD of MLB MEDICAL college, Jhansi ,Uttar Pradesh and were followed from 1st June 2021 - 1st December 2021 . It was performed under the Helsinki Declaration of 1975, as revised in 2000. The necessary permission from the Ethical and Research Committee was obtained for the study.

INCLUSION CRITERIA

1.All pregnant female patients who presented to the OPD of MLB medical College Jhansi with the complaint of diminution of vision and had pregnancy induced hypertension ie had high blood pressure with generalized oedema and proteinuria were included.

EXCLUSION CRITERIA

1. Patients with ocular systemic diseases(like diabetes) that could affect the retina.
2. Patients with other retinal disorders
3. Patients with recent intraocular surgery
4. Patients with the history of trauma
5. Mentally or physically unfit patients

All patients were subjected to a detailed history taking, refraction using Topcon autorefractometer and best corrected visual acuity (VA) measurement. All patients had complete ophthalmic examination including biomicroscopic slit lamp examination , fundus examination with 90D lens and fundus photography and optical coherence tomography.

Optical coherence tomography examination was done through dilated pupils, OCT examination was done through a dilated pupil using commercially available Cirrus HD-OCT Model 4000 - Carl Zeiss Meditec, Inc., Dublin,California, USA or Spectralis OCT Heidelberg Engineering.

RESULTS

A total of 100 eyes of 50 female patients were studied. We included female pregnant patients with pregnancy induced hypertension who complained of diminution of vision. 60% of the studied eyes were the right eyes.

All eyes had one or more features typical of preeclampsia (arteriolar narrowing, cotton wool spots, hard exudates, flame shaped haemorrhages, disc edema and disc haemorrhage)

Table1: Fundus finding in patients of pregnancy induced hypertension

| Features | Number of patients |
|--------------------------|--------------------|
| Arteriolar narrowing | 100 |
| Cotton wool spots | 86 |
| Flame shaped haemorrhage | 62 |
| Hard exudates | 58 |
| Disc edema | 56 |
| Disc haemorrhage | 12 |

Table2: Optical coherence tomography finding in patients of malignant hypertension

| Features | Number of patients |
|------------------------------------|--------------------|
| Macular edema | 36 |
| Irregular reflection | 34 |
| Thickening of RNFL | 42 |
| Subretinal fluid | 51 |
| Inner retinal fluid | 20 |
| Hyperreflective dots within retina | 62 |

DISCUSSION

This study was undertaken to evaluate the fundus changes in patients of Pregnancy induced hypertension which is one of the most common causes of morbidity and mortality in obstetrics and is a hypertensive disorder with multisystem involvement, that affects 3-5% of pregnancies.

In the present study, maximum no. of the cases 71% were of mild preeclampsia, 24% of severe preeclampsia and the 5% of eclampsia, there was no patient of gestational hypertension in the study. Maximum cases of mild preeclampsia found, could be due to good antenatal medical checkup.

Similarly in the study done by Tadin et al^[9] from Croatia 55% of mild preeclampsia, 25% of severe preeclampsia and 20% of eclampsia and in a study done by N.Rama Bharathi et al^[10] 11.33% of gestational hypertension, 48.66% of mild preeclampsia, 24.66% of severe preeclampsia and 15.33% of eclampsia, similar to present study.

The study done by Reddy et al^[11] showed 38.5% patients of mild preeclampsia, 59% patients of severe preeclampsia and 2.5% patients of eclampsia. Max cases of severe preeclampsia were found. This could be due to lack of awareness of antenatal checkup among the patients.

In our study retinal changes were found in 64% of the patients. Rest 36% patients had normal fundus finding. Present study show positive association of fundus finding with severity of pregnancy induced hypertension. There is more chance of the patient having abnormal fundus finding as the severity of pregnancy induced hypertension increases.

In the study done by Reddy et al^[11] includes 78 patients with PIH showed prevalence rate of 59%. Tadin et al^[9] from Croatia, he found 45% of retinal changes in their study on 40 patients with PIH. In a study done by N. Rama Bharathi et al^[10] , The prevalence rate of fundus changes was 23.33% lesser than that of our study but showed positive correlation with blood pressure and severity of disease of hypertensive retinopathy. In the present study Grade 1 hypertensive retinopathy changes were found in 32% patients, Grade 2 changes were found in 24 % , Grade 3 were found in 6% and grade 4 changes were found in 2% of patients. which is similar to the study done by Yadav et al^[12] , Grade 1 in 32 % cases, Grade 2 in 21% Grade 3 were found in 6% and grade 4 changes were found in 2% of patients.

Their study stated that hypertensive retinopathy is the prognostic factor in determining the severity of preeclampsia and that examination of fundus is a valuable and also plays an important role diagnosis in preeclampsia.

CONCLUSION

The retinal vascular changes have been said to correlate with the severity of hypertension. Many studies have considered the progression of retinal vascular changes as a sign of increasing severity of Pregnancy induced hypertension and have correlated them with foetal mortality as well as maternal outcome. These changes help as a guideline for termination pregnancy as they may reflect similar ischemic vascular changes in the placenta. Ophthalmoscopy is a simple tool that can help the obstetrician in assessing the severity of disease in cases of PIH. In general, it is believed that the presence of changes in the retinal arterioles and retinal haemorrhages may indicate similar changes in the placenta. Since the wellbeing of the foetus depends on the placental circulation, ophthalmoscopic examination of mother's fundus may give a clue to similar microcirculation changes in the placenta and indirectly to the foetal wellbeing and maternal outcome. Fundus examination in patients with Preeclampsia is an important clinical evaluation to predict adverse foetal outcome

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