



FUNDUS CHANGES IN PREGNANCY INDUCED HYPERTENSION

Dr. Fathimulla Sayeeda*

M.S *Corresponding Author

Dr. Chanda Sindhu Priya

M.S

ABSTRACT Pregnancy induced hypertension (PIH) is a hypertensive disorder in pregnancy that occurs in the absence of other causes of elevated blood pressure (140/90mmHg), along with generalized edema and/or proteinuria. **PURPOSE:** To determine the prevalence of retinal changes in pregnancy induced hypertension & association between retinal changes and blood pressure, proteinuria, severity of disease. **SUBJECTS AND METHODS:** This cross sectional, observational study was conducted over a period of eight months (January to August 2021). All the patients who fulfilled the diagnostic criteria of PIH (>24 weeks of pregnancy, high arterial blood pressure and proteinuria) admitted in Obstetrics and Gynaecology ward, Government General Hospital, Kurnool were included. Exclusion criteria: Patients who had pre-existing diabetes or hypertension or renal disease or hazy media which did not permit fundus examination were excluded from the study. After taking history for any eye symptoms, anterior segment was examined with torch light on the bed itself. Both pupils were dilated with 1% tropicamide eye drops and fundus examination was done with direct ophthalmoscope in a semi dark room in the ward. Hypertensive retinopathy changes seen in right or left or both eyes, were taken as positive findings in that patient. Age, race, gravida, para, blood pressure, proteinuria were noted from the case records. PIH was graded as preeclampsia (mild and severe) and eclampsia. All the findings were noted on a data sheet. **RESULTS:** A total of 30 patients were examined. The mean age of patients was 30 years (range 21-45 years). The gestation period ranged between 25 and 40 weeks. 18 were primi gravida, 8 were multi gravida and 4 were grand mults. Among them 22 had mild preeclampsia, 6 had severe preeclampsia and 2 had eclampsia. Blurring of vision was present in two patients of severe preeclampsia and visual acuity was 6/9 in both eyes in both patients and 6/12 in both eyes in one patient of eclampsia. Visual acuity was normal (6/6 in both eyes) in 27 patients. Retinal changes (hypertensive retinopathy) were noted in 16 (53%) patients.

KEYWORDS : pregnancy induced hypertension, preeclampsia, and hypertensive retinopathy

INTRODUCTION

Pregnancy induced hypertension (PIH) is a hypertensive disorder in pregnancy that occurs in the absence of other causes of elevated blood pressure (140/90mmHg), along with generalized edema and/or proteinuria. With significant proteinuria it is termed as preeclampsia, with seizures or coma it is termed as eclampsia(1). Pathology is vascular endothelial dysfunction and its consequences (generalized vasospasm and capillary leak). Retinal vascular changes generally correlate with severity of systemic hypertension. Grade I, II hypertensive retinopathy changes are reversible.

SUBJECTS AND METHODS:

This cross sectional, observational study was conducted over a period of eight months (January to August 2021).

Inclusion criteria: All the patients who fulfilled the diagnostic criteria of PIH (>24 weeks of pregnancy, high arterial blood pressure and proteinuria) admitted in Obstetrics and Gynaecology ward, Government General Hospital, Kurnool were included.

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Hypertensive retinopathy changes seen in right or left or both eyes, were taken as positive findings in that patient. Age, race, gravida, para, blood pressure, proteinuria were noted from the case records. PIH was graded as preeclampsia (mild and severe) and eclampsia. All the findings were noted on a data sheet.

The retinal changes (hypertensive retinopathy) were graded according to Keith Wagener classification into:

- Grade I – mild generalized arterial attenuation, particularly of small branches
- Grade II – more severe grade I + focal arteriolar attenuation

- Grade III – grade II + haemorrhages, hard exudates, cotton wool spots
- Grade IV – grade III + optic disc swelling (papilledema) (2).
- The severity of PIH was classified into preeclampsia (mild and severe) and eclampsia, based on the following findings:
- Mild preeclampsia - BP>140/90mmHg, proteinuria +, and/or mild edema of legs;
- Severe preeclampsia - BP>160/110mmHg, proteinuria ++ or +++, headache, cerebral or visual disturbances, epigastric pain, impaired liver function tests, and increased serum creatinine;
- Eclampsia - severe preeclampsia + convulsions.
- Proteinuria was tested using dipstick method and was graded as :
 - + = 0.3 gm/L
 - ++ = 1 gm/L and
 - +++ = 3 gm/L.
- The results were analyzed using SPSS program. Chi-square test was used to determine the association between the retinal changes and blood pressure, proteinuria, and severity of PIH. A P value < 0.05 was taken as significant.

RESULTS:

- A total of 30 patients were examined. The mean age of patients was 30 years (range 21-45 years). The gestation period ranged between 25 and 40 weeks. 18 were primi gravida, 8 were multi gravida and 4 were grand mults. Among them 22 had mild preeclampsia, 6 had severe preeclampsia and 2 had eclampsia.
- Blurring of vision was present in 2 patients of severe preeclampsia and visual acuity was 6/9 in both eyes in both patients and 6/12 in both eyes in one patient of eclampsia. Visual acuity was normal (6/6 in both eyes) in 27 patients. Retinal changes (hypertensive retinopathy) were noted in 16 (53%) patients.

Figure 1: Grades of HTN retinopathy

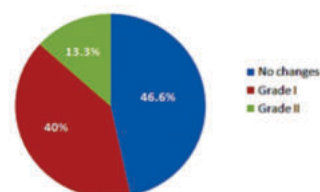


Figure 2: Retinal changes based on blood pressure level:

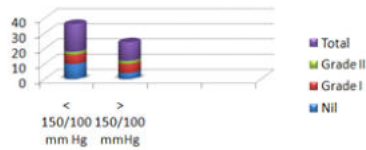


Figure 3: Retinal changes based on severity of disease:

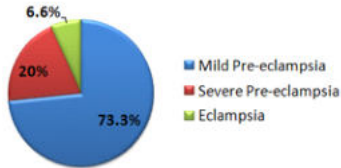
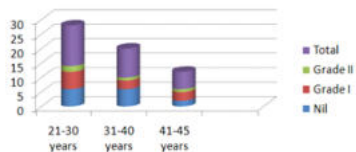


Figure 4: Retinal changes based on age:



DISCUSSION:

- In the present study, hypertensive retinopathy changes (grade I and II) were seen in 53% of patients with pregnancy induced hypertension.
- Haemorrhages, exudates and retinal detachment were not seen in any of the patients in this study.
- Since the antenatal check up of pregnant ladies has improved much hypertension was detected early during the antenatal visits and treatment was started immediately. This could be the probable reason for the presence of only grade I and grade II hypertensive retinopathy changes in our study.
- Pregnancy induced hypertension is responsible for maternal deaths, especially in the developing countries.
- Presence of macular edema or papilledema or retinal detachment are the warning signs for termination of pregnancy to save the vision of the mother (3). The management of retinal detachment is not surgery, but termination of pregnancy after controlling blood pressure so that vision can be saved in the affected eye.
- Presence of changes in the retinal arterioles and retinal hemorrhages may indicate similar changes in the placenta. Since the well being of the fetus depends on the placental circulation, ophthalmoscopic examination of mother's fundus may give a clue to similar micro-circulation changes in the placenta and indirectly to the fetal wellbeing. Fundus examination in patients with PIH is an important clinical evaluation to predict adverse fetal outcomes (4).

CONCLUSION:

Retinal changes (grade I and II hypertensive retinopathy) were seen in 53% of patients with PIH and were significantly associated with blood pressure, proteinuria and severity of the disease. Fundus examination helps in assessing the severity of PIH and also response to treatment instituted.

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