



CLINICAL STUDY ON FUNDUS CHANGES IN PREGNANCY INDUCED HYPERTENSION IN A TERTIARY CARE HOSPITAL

Dr. M. Kiranmai Associate Professor

Dr. K. Bhuvaneshwari* Junior Resident *Corresponding Author

Dr. K. Renuka Ophthalmologist

ABSTRACT Pregnancy-induced hypertension (PIH) is a syndrome of hypertension with or without proteinuria and oedema. PIH complicates 6 – 10% of pregnancies, major cause of new born, foetal, maternal morbidity, and mortality. The Incidence of Preeclampsia in nulliparous is more common than in multiparous women. Headache, visual disturbances and right upper quadrant pain are indicative of imminent eclampsia. Diagnosis is by clinical examination and various diagnostic modalities like regular BP measurement, weight check-up, fundus examination, and other laboratory investigations. They are at greater risk of abruptio placenta, early diagnosis is needed to reduce complications and improve foetal outcome.

KEYWORDS : Hypertension, Pregnancy, Fundus, Retinopathy.

INTRODUCTION

Pregnancy-induced hypertension is a syndrome of hypertension with or without proteinuria and oedema with clinical manifestations usually occurring in late pregnancy and regressing after delivery of the conceptus. PIH complicates 6 – 10% of pregnancies and is a major cause of new born, foetal, maternal morbidity, and mortality(1). Women with PIH are at higher risk of adverse pregnancy outcomes than those without. Women with PIH are at greater risk of abruptio placenta, cardiovascular events, organ failure, and disseminated intravascular coagulation. Foetal issues like IUGR, prematurity, intrauterine death, and stillbirths.

According to ACOG (American College of Obstetricians and Gynecologists), hypertension in pregnancy is diagnosed by any one of the following criteria:

1. A rise of 30 mm Hg or more in SBP (systolic blood pressure)
2. A rise of 15 mm Hg or more in DBP (diastolic blood pressure)
3. A Systolic Blood Pressure of 140 mm Hg or more
4. A Diastolic Blood Pressure of 90 mm Hg or more

PIH in nulliparous and young women are particularly vulnerable to develop preeclampsia. According to several worldwide studies, the Incidence of Preeclampsia in nulliparous is 3-10% and 1.4 -4% in multiparous(2). To reduce the complications in PIH cases early diagnosis is needed for good foetal outcome. Diagnosis is by clinical examination and various diagnostic modalities like regular BP measurement, weight check-up, fundus examination, and other blood, urine, and imaging techniques. The establishment of adequate prenatal care is the only effective way to reduce PIH.

Headache, visual disturbances and right upper quadrant pain are indicative of imminent eclampsia. Visual symptoms occur in 25% of severe preeclampsia patients and 50% of eclampsia patients(3). They often present with scotoma, blurred vision, or diplopia. Usually, improve with MgSo₄ therapy and lowered BP. Blindness is rare but it complicates eclamptic convulsions in up to 15% of women(4).

In many of the studies there is no mention of retinal changes with paucity of data available in the published literature on the prevalence of retinal changes in PIH studies. Hence, the purpose of this study is to ascertain the prevalence of fundus abnormalities in patients with PIH.

Aims and Objectives

To find out the association of fundus changes with the severity of PIH, estimating the incidence of fundus changes in PIH patients and foetal outcome.

MATERIALS AND METHODS

A cross-sectional study conducted in 100 subjects for 18 months on antenatal women diagnosed with PIH attending obstetric OPD, ophthalmology OPD and admitted to the maternity ward in our hospital. The patients were selected as per the inclusion and exclusion criteria.

Inclusion criteria includes all pregnant women diagnosed with PIH. Exclusion criteria includes all pregnant women with chronic hypertension, pregnant women with pre-existing renal diseases, pregnant with hazy media that obscure fundus examination and all normotensive pregnant women.

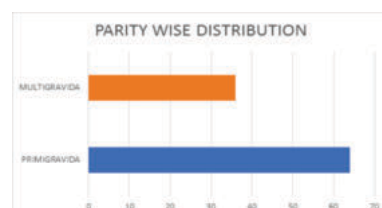
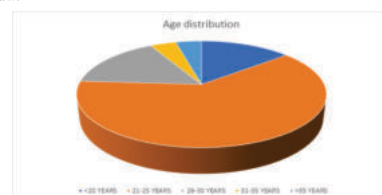
All the patients who fulfilled the diagnostic criteria of PIH were grouped according to age, parity, severity of PIH, grade of fundus changes and fetal outcome. After taking a history regarding headache, visual disturbances, visual field defects, diplopia, epigastric pain, rapid weight gain, seizure, etc., the patient was tested for visual acuity at the bedside and the external ocular examination was done. Fundus examination was done after dilating pupils with tropicamide using a direct ophthalmoscope.

The subjects were explained in their local language. They were informed that the data collected in the study will be used only for research purposes. Confidentiality of the data was maintained throughout the study. The participants who required medical attention during the period of the study were given appropriate medical care. Patient Information data and Informed Consent was obtained from the patient before initiating the study.

The collected data was verified before entering the Microsoft Excel spreadsheet. The validation of the data was checked at regular intervals. Data analysis was performed using Statistical Package for Social Sciences (SPSS). The quantitative data was expressed in frequency and percentages. Data has been subjected to Chi-square test and the P value was calculated.

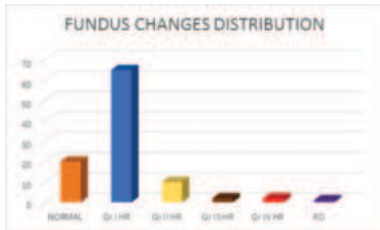
RESULTS

In our study, age wise incidence of PIH was studied and observed that highest subjects were in 21-25 years age group and least were in >31 years age group. PIH is more common in primigravida than multigravida.



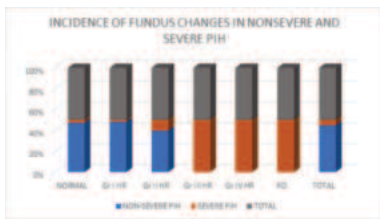
Out of 100 subjects, 90 subjects had non-severe PIH with DBP <110 mmHg and 10 subjects with severe PIH with DBP ≥ 110 mmHg.

The subjects in our study were grouped according to the grade of fundus changes and observed that most of the subjects were with grade I fundus changes followed by grade II and least with higher grades. Fundus changes were seen in 80% while 20% had normal fundus. 75 % have a mild degree of fundus changes and 5 have a severe degree of fundus changes. It was observed that a greater percentage of fundus changes were seen in patients with higher levels of hypertension.



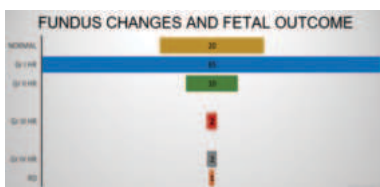
Among 100 patients with PIH, 95 had uneventful deliveries with live babies and good weight. Only 2 were LBW babies, 1 were VLBW twins, and 2 were Still Births. The 2 Still Born babies were delivered by antenatal mothers with severe PIH and Gr IV Hypertensive Retinopathy Fundus changes. Thus, the greater the degree of fundus changes, the greater the fetal morbidity and mortality.

FUNDUS	NON-SEVERE PIH	SEVERE PIH	TOTAL
NORMAL	19	1	20
Gr I HR	63	2	65
Gr II HR	8	2	10
Gr III HR	0	2	2
Gr IV HR	0	2	2
RD	0	1	1
TOTAL	90	10	100



Among 100 PIH patients observed, all the patients with Gr I HR showed good foetal outcomes. Among 10 patients showing Gr II HR, 1 patient showed LBW and the remaining had a good foetal outcome. Among 2 patients showing Gr III HR, 1 had an LBW baby and the other 1 with VLBW twins. Among 2 patients with Gr IV HR, both had stillbirths. But 1 patient with serous RD has a good foetal outcome. In our study we have summarised that the greater the degree of fundus changes, the greater the foetal morbidity.

FUNDUS	NUMBER OF MOTHERS WITH PIH	FETAL OUTCOME
NORMAL	20	GOOD
Gr I HR	65	GOOD
Gr II HR	10	9-GOOD 1-LBW
Gr III HR	2	1-LBW 1-VLBW TWINS
Gr IV HR	2	STILLBIRTHS
RD	1	GOOD



DISCUSSION

The retina is the only area in the human body where an ophthalmoscope can be used to view the vasculature directly. Therefore, a shift in retinal arterioles suggests that the placenta is in a similar state and offers a plausible theory regarding placental circulation and foetus health (5). Early detection of PIH can prevent

difficulties for both the mother and the foetus. Vascular endothelial dysfunction and its aftereffects (capillary leak and widespread vasospasm) are linked to the pathological alterations. Vasospastic symptoms are reversible, and shortly after delivery, the retinal vessels revert to their natural state.

Age of the group varied from 15 years to 37 years. Most of the patients were in the age group of 21-25 years. Pregnancy-induced hypertension is more common in primigravida than multigravida. (6) Fundus changes are hypertensive retinopathy and one case of serous retinal detachment. 20% of the patients showed normal fundus, 65% showed grade I hypertensive retinopathy, 10% showed grade II hypertensive retinopathy, 2% showed grade III hypertensive retinopathy, 2% showed grade IV hypertensive retinopathy and 1% showed serous retinal detachment.

It was observed that the greater the severity of hypertension, the greater the degree of fundus changes. A p-value of 0.01, shows a significant association of fundus changes with the severity of PIH.

Most of the grade I and grade II hypertensive retinopathy had uneventful deliveries with live babies. (7). Only one patient with grade II hypertensive retinopathy had an LBW baby of 2 kilograms. Among 2 patients with grade III hypertensive retinopathy, one had an LBW baby of 2 kilograms, and the other delivered VLBW twins of weight 1500 and 1400 grams. Out of 2 patients with grade IV retinopathy, both had stillbirth babies. Thus, the greater the fundus changes greater the foetal and maternal morbidity or mortality. A p-value of 0.01, shows a significant association of fundus changes with foetal outcome.

In all the cases where the pregnancy was terminated, fundus examination was greatly contributory.

CONCLUSION

Development of hypertensive retinopathy is directly related to the severity of pregnancy-induced hypertension. The presence of fundus changes is considered an indirect marker of the severity of PIH, so it is better to recommend fundus examination in all PIH patients. Regular ophthalmoscopic examination during a hospital stay plays a role in aiding obstetricians in the management of patients with PIH. Patients with a lesser degree of fundus changes like grade I and grade II hypertensive retinopathy were allowed to continue the pregnancy with a little care and had a good foetal outcome. Patients with grade III hypertensive retinopathy are treated with utmost care and under regular monitoring with BP and fundus examination. In Patients with grade IV hypertensive retinopathy, pregnancy is terminated irrespective of gestational period. Early interruption of pregnancies results in more living babies, though may have premature or LBW babies. Foetal outcomes were the same in patients with PIH with only vascular changes on the fundus examination and those with no fundus changes. While a low APGAR score and low birth weight were seen in retinal and optic nerve head changes. Thus, fundus examination has proven to be of unquestionable value in the reduction of both morbidity and mortality of both the mother and the fetus.



Figure 1 – Normal Fundus

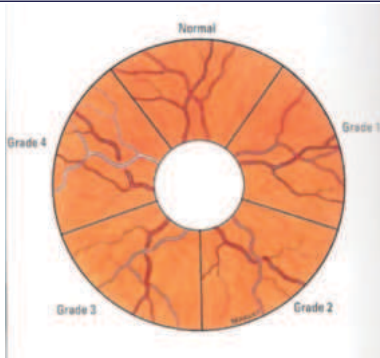


Figure 2 Diagrammatic Representation Of Grading of Fundus Changes

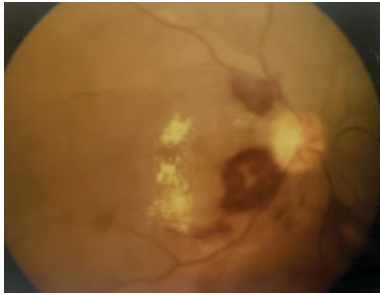


Figure 3 Grade III Hypertensive Retinopathy With Haemorrhages, and Exudates

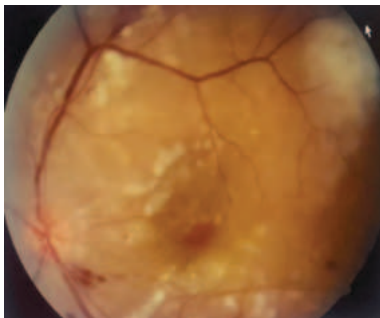


Figure 4 Grade IV Hypertensive Retinopathy Showing DISC EDEMA, Cottonwool Spots and Superficial Hemorrhages

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