

A PROSPECTIVE CASE CONTROL STUDY OF FUNDUS CHANGES IN PREGNANCY INDUCE HYPERTENSION



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Abstract

Methods: The study was designed as prospective case study conducted for duration January 2021 to June 2022. Complete medical history, detailed local and systemic examination was done. Ocular examination with fundus done using direct and indirect Ophthalmology.

Results: The age group most commonly represented in our study is 26-30 years. The most frequently encountered presenting symptoms following: Blurring of vision(63%) and Headache(37%). Primigravida was highly distributed in our study population compared to multigravida. 28.5% had Grade1 retinopathy, 13.5% had Grade2 Retinopathy, 8% had Grade3 Retinopathy observed during observation of pregnancy induced hypertension affected females. In our study, we were observed that 50% prevalence rate of fundus changes in pregnancy induced hypertension affected females.

Keyword: Ophthalmology, Original Research Paper

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1. Introduction

Pregnancy causes a number of physiological and pathological deviations; pregnancy-induced hypertension (PIH) was previously referred to as toxemia of pregnancy which was marked by high blood pressure, proteinuria, and oedema in general. Preeclampsia - eclampsia is another term for PIH. PIH, is the most generally used term now; it will be used in the following discussions.

The American College of Obstetrics and Gynaecology defines the syndrome as "hypertensive disorders in pregnancy." It is a significant cause of maternal and foetal morbidity and death. The syndrome is a multi-system disorder that can lead to death.

In pregnancy (after 20 weeks), patient who was previously normotensive, preeclampsia is a pregnancy-specific disease characterized clinically by hypertension (blood pressure 140/90 mmHg) and proteinuria (300 mg in a 24-hour urine collection). Preeclampsia and its variations continue to be the primary causes of maternal and fetal morbidity and mortality worldwide, affecting about 5% of pregnancies. Approximately 0.5% of people with mild preeclampsia develop the convulsive form of the condition, known as eclampsia. The frequency of eclampsia in developed nations ranges from 1 in 2000 to 3000 deliveries.

Retinal vessels are the only body parts of which the vascular changes can be directly observed in vivo, and fundus examination was the principal criterion to evaluate the development degree of PIH. It has been suggested that retinal vascular alterations are related to how severe hypertension is. Numerous research have examined and connected the evolution of vascular abnormalities in the retina to perinatal

mortality as a warning that PIH is getting worse. These changes serve as a guideline for pregnancy termination as they may be indicative of similar ischemic vascular changes in the placenta.

For these reasons, objective, dependable, quantitative, and highly sensitive imaging methods are required for ophthalmic disease diagnosis and monitoring in pregnant women. This study was conducted to assess the fundus changes in patients with pre-eclampsia and eclampsia due to the recent development of relevant imaging technology.

Aims:

To find the occurrence of fundus changes in pregnancy induced hypertensive patient.

Objectives:

To examine occurrence of fundus changes in pregnancy induced hypertension.

2. Material and Methods

Prospective observational study was conducted on 200 patients with preeclampsia and eclampsia for duration January 2021 to June 2022 in department of ophthalmology in OPD and Department of Obstetrics and Gynecology Kamla Raja Hospital OPD or labour room were taken for this study with full written and verbal consent with the entire study explained to the patient and patients attendants. After obtaining informed consent, complete ocular examination and fundus examination was done.

Procedure:

A detailed history and ocular examination of each patient will be done either in OPD (OBGY/ophthalmology) or from labour room. All patients fulfilling inclusion and exclusion criteria were studied for ocular fundus changes at admission. 1% tropicamide (mydriatic drug) is used for dilation of pupil. After dilation of pupil

examination of fundus done by direct as well as indirect ophthalmoscope. Control will be selected randomly.

Inclusion Criteria:

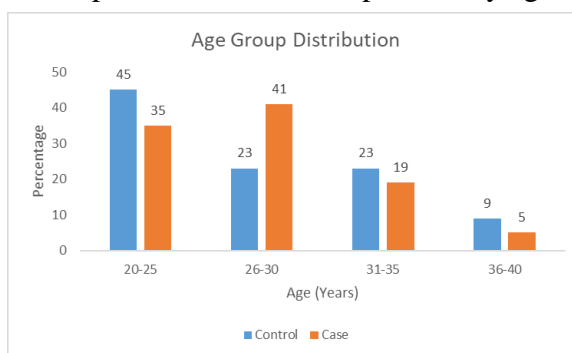
- ✓ Gestational Hypertension
- ✓ Pre-eclampsia i.e. BP>140/90mmHg with proteinuria $\geq \pm 1$ and edema
- ✓ Eclampsia i.e. pre eclampsia superimposed with convulsions.

Exclusion Criteria:

- ✓ Known case of diabetes
- ✓ Patient having pre existing retinal diseases
- ✓ Patient with preeclampsia and eclampsia super imposed on chronic hypertension
- ✓ Thyroid disorder
- ✓ Haematological disorder

3. Observation and Results

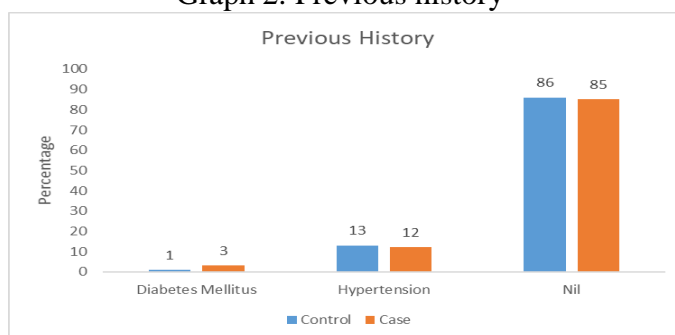
Graph 1: Distribution of patients by age



Among Controls, highest number of percentage observed in the age group of 20-25years (45%) where as least percentage observed in the age group of 36-40years (9%). Among Cases, highest number of percentage observed in the age

group of 26-30years (41%) where as least percentage observed in the age group of 36-40years (5%). We observed significant association between Age group of Cases with Age group of Controls. (p=0.0495)

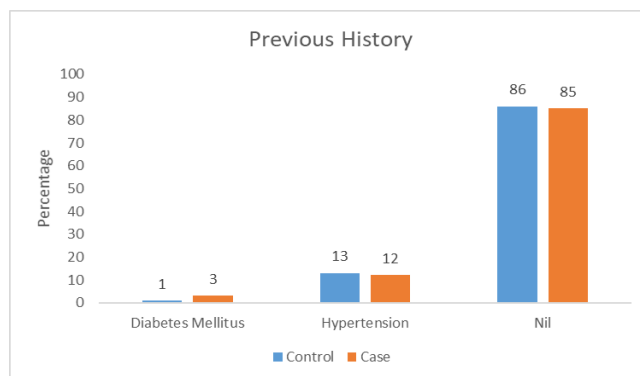
Graph 2: Previous history



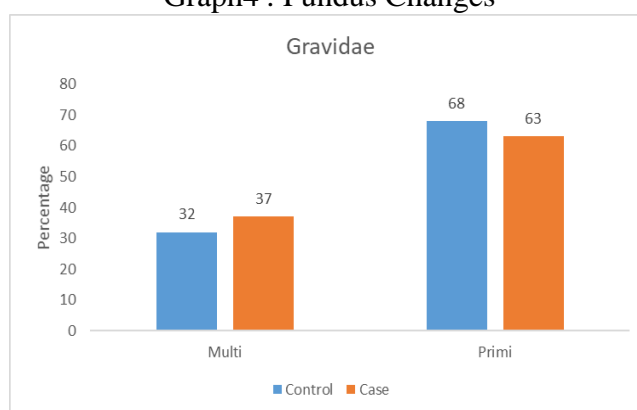
We observed that previous history like Diabetes (p= 0.3136) and hypertension (p= 0.8311) were not significantly

associated between no fundus changes patients and fundus changes in patients

Graph3: Gravidae



Graph4 : Fundus Changes



We observed that Gravidae ($p=0.4582$) was not significant associated between no

fundus changes patients and fundus changes in patients.

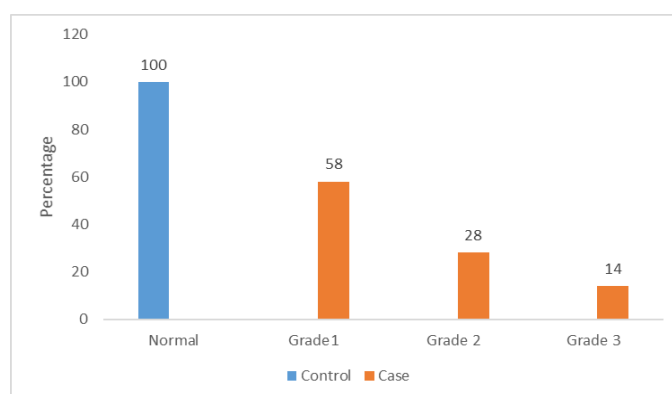


Table1: Fundus changes

	Frequency	Percentage
Mild	57	28.5
Moderate	27	13.5

Severe	16	8
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Among 200 patients, 28.5% were mild fundus changes, 13.5% were moderate fundus changes and remaining 8% had severe fundus changes.

4. Discussion

This study was undertaken to evaluate the fundus changes in 200 patients of hypertensive disorders of pregnancy and normal healthy individuals. A total of 100 cases and 100 controls were included in this study, of which 35 were in the age group of 21-25 years, 41 in the age group of 26-30 years, 19 cases had age \leq 20 years and the rest $>$ 30 years. Mean age of the cases in our study was 28.06 ± 4.32 years. Age in our study ($P = 0.825$) was not associated with retinopathy changes ($P > 0.05$) which is similar to the results quoted

by Reddy et al. Visual symptoms are generally not very frequent in patients of PIH. In our study, 61% of patients had headache, 37% had blurred vision in control patients as one of the complaints while 63% of patients complained of blurred vision and 37% patients complained of headache. The prevalence rate of fundus changes found in our study is 50% which is more than Tadinetal¹⁴.

Severity of hypertension

In the present study, 63% of the cases studied had gestational hypertension, 22% had mild hypertension with blood pressure $<$ 110 mmHg. 9% had severe hypertension with blood pressure \geq 110 mm Hg and the rest 6% had hypertension with seizures (eclampsia).

Table2: Comparison of severity of hypertension with other studies

SEVERITY OF HYPERTENSION	Present study	Reddy et al	Tadin et al	Ayush et al
GESTATIONAL HTN	50%	—	—	—
MILD	28.5%	38.4%	55%	59.2%
SEVERE	13.5%	59%	25%	33.1%
ECLAMPSIA	8%	2.5%	20%	7.7%

Table 3: Comparison of hypertensive retinopathy with various studies

Hypertensive retinopathy	Present study	Reddyetal	Tadinetal	Ayush etal
Grade1	28.5%	52.6%	25%	57.7%
Grade2	13.5%	6.4%	15%	2.4%
Grade3	8%	—		2.4%

5. Conclusion

In conclusion, fundoscopy is a simple tool that can help the obstetrician in assessing the severity of disease in cases of PIH. There is significant correlation with these verity of disease and the levels of hypertension. Most of the fundus changes in PIH are under diagnosed. Timely ophthalmoscopy should be called for in all cases of PIH as it would affect the decision of induction of delivery, there by preventing other complications. There is a need for routine examinations and institutional deliveries in pregnancy and an improvement in the management of Pregnancy Induced Hypertension, so as to prevent serious complications like Serous Retinal Detachment . Thus, it is crucial to do regular fundoscopy tests simultaneously with prenatal examinations for pregnant women who have a pregnancy duration of more than 20 weeks and a medical history of hypertension or unstable blood pressure. This can contribute to earlier finding of fundus changes, and thus provide diagnostic basis for obstetricians to take medical measure in time.

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