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RESEARCH ARTICLE

STUDY OF CLINICAL PROFILE AND OCULAR CHANGES OF PATIENTS HAVING PREGNANCY INDUCED HYPERTENSION IN A TERTIARY CARE RURAL HOSPITAL

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Abstract

Purpose: To study clinical profile and ocular changes of patients having Pregnancy Induced Hypertension and to find the anterior and posterior segment changes.

Materials and Methods: A hospital based, descriptive cross sectional study was conducted at a tertiary care hospital from March 2023 to December 2023. A total of 150 patients with Pregnancy Induced Hypertension (PIH) were screened and evaluated. Evaluation was done on basis of detailed history and examination including bedside visual acuity, torch light examination and fundus examination. Demographic data and other significant findings were noted. Patients with PIH exhibiting ophthalmic symptoms or referred for fundoscopic evaluation were included in the study. Patients with history of pre-existing hypertension, convulsions and history of previous ocular surgery were excluded from the study.

Results: Out of 150 patients studied, maximum PIH patients with ocular changes were in the age group of 28-32 years. The distribution of PIH patients with ocular changes was almost equivalent between primigravida (29.48%) and multigravida (30.55%). A total of 4.66% patients had anterior segment findings like chemosis (3.33%), subconjunctival hemorrhage (0.66%) and lid edema (0.66%). Out of 150 patients, 70% of patients had normal fundus findings. Among those with hypertensive retinopathy, 18% had Grade I, 3% had Grade II, 7% had Grade III and 2% had Grade IV changes. Arteriolar attenuation was the most common retinal sign seen in 27.33% of patients.

Conclusion: In our study,150 patients of PIH were studied in which 4.66% patients showed anterior segment changes and 30% showed posterior segment changes. Presence of ocular changes is an indirect marker of severity of PIH and is of prognostic value.

Introduction:-

Pregnancy-induced hypertension (PIH) refers to hypertension that develops due to pregnancy. According to the National High Blood Pressure Education Program (NHBPEP, 2000)[1] and the American College of Obstetricians and Gynecologists (ACOG, 2002),[2] PIH encompasses gestational hypertension, pre-eclampsia, and eclampsia. The most recent definition of hypertension in pregnancy from ACOG was published in 2013, with updates in 2019 and 2020. Globally, most guidelines define hypertension in pregnancy as a blood pressure of 140/90 mm Hg or higher. Pre-eclampsia is a multi-system disorder of unknown cause, marked by the development of hypertension (≥140/90

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mm Hg) and proteinuria after the 20th week of pregnancy in a woman who was previously normotensive and non-proteinuric. Pre-eclampsia is categorized into mild and severe forms, with severe pre-eclampsia characterized by blood pressure exceeding 160/110 mm Hg and proteinuria greater than 2 gm/24 hours or +2 on dipstick. When convulsions occur alongside this condition, it is referred to as eclampsia.

Ocular complications are frequently seen in pregnancy-induced hypertension (PIH), with the prevalence ranging from 30-100% in various studies.[3]Untreated eclampsia is responsible for 75% of maternal deaths[4,5] and leads to permanent blindness in 1-3% of patients.[6] PIH is a multi-system disorder that can impact vital organs, including the kidneys, liver, eyes, blood system, and placenta. Retinal involvement is common, but it is not always thoroughly examined. The eye is unique in that its blood vessels can be directly and non-invasively observed using fundoscopy. Changes in the fundus during severe preeclampsia should not be overlooked, as they may signal the onset of eclampsia.[7] For this reason, it is crucial that any physician managing PIH ensures that an ophthalmological assessment is performed.

Aim:-

To study the clinical profile and ocular changes of patients having PIH and to find the anterior and posterior segment changes in patients of PIH.

Materials and Methods:-

A hospital-based, descriptive cross-sectional study was carried out at a tertiary care hospital from March 2023 to December 2023. The study commenced after receiving approval from the Institutional Ethical Committee and obtaining informed consent from the patients or their relatives. A total of 150 patients with PIH were screened and assessed. The evaluation included a thorough medical history and examination, which involved bedside visual acuity testing, torch light examination, and fundus examination. Demographic details and other relevant findings were recorded. The study included patients with PIH who exhibited ocular symptoms or were referred for fundoscopic evaluation. Patients with a history of pre-existing hypertension, convulsions, or previous ocular surgery were excluded from the study.

Results:-

Table No. 1:- Age wise distribution of PIH patients.

Age	Number of patients	Ocular changes present	Ocular changes absent
18-22	51	13 (25.49%)	38 (74.51%)
23-27	49	13 (26.53%)	36 (73.47%)
28-32	33	15 (45.45%)	18 (54.55%)
33-37	11	3 (27.27%)	8 (72.73%)
38-42	6	1 (16.67%)	5 (83.33%)
Total	**150**	**45**	**105**

In our study, the age group 28-32 years has the highest number of patients (45.45%)with ocular changes.

Table No. 2:- Classification of PIH patients according to gravida score.

Gravida sore	Number of patients	Ocular changes present	Ocular changes absent
Primigravida	78	23 (29.48%)	55 (70.52%)
Multigravida	72	22 (30.55%)	50 (69.45%)
Total	**150**	**45**	**105**

In our study, the distribution of PIH patients with ocular changes was almost equivalent between primigravida (29.48%) and multigravida (30.55%).

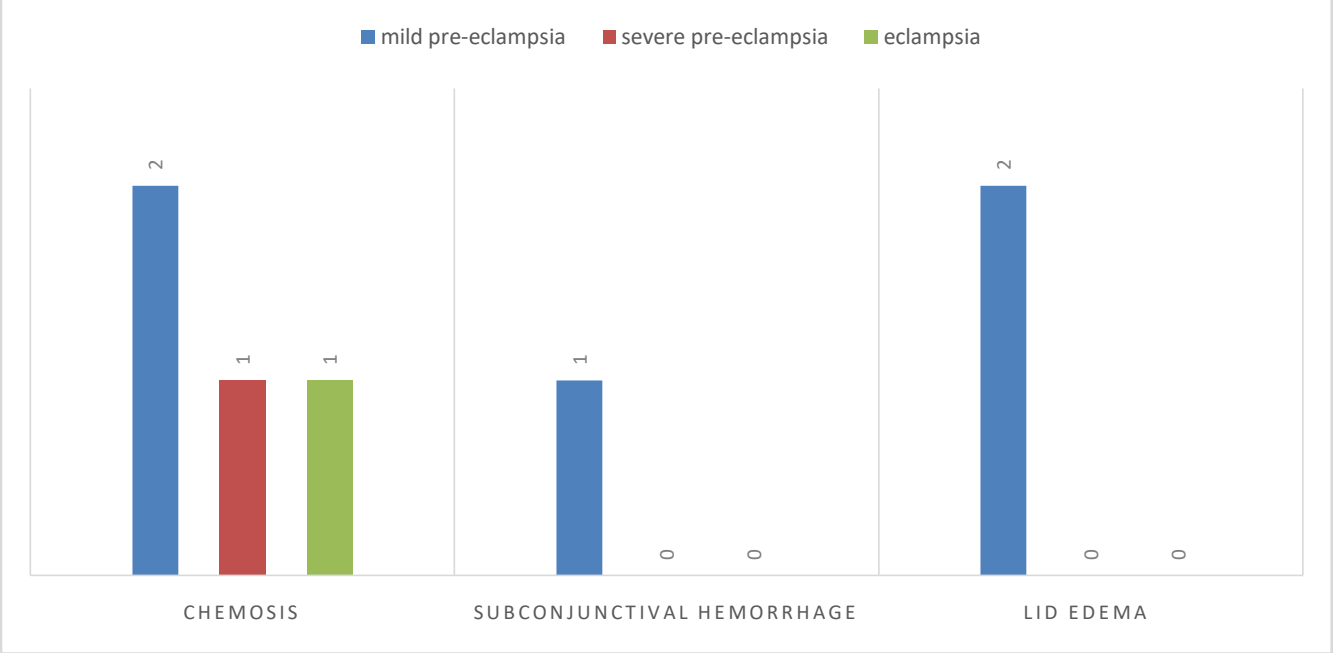
Table No.3:- Comparison of PIH patients with anterior and posterior segment changes.

Severity of pih	Anterior segment changes present	Posterior segment changes present
Mild pre-eclampsia (n=123)	4 (3.25%)	34 (27.64%)
Severe pre-eclampsia (n= 20)	1 (5%)	4 (20%)
Eclampsia (n=7)	2 (28.57%)	7 (100%)
Total (n=150)	7 (4.66%)	45 (30%)

Out of 150 patients, 82% had mild pre-eclampsia, 13.33% had severe pre-eclampsia,and 4.67% had eclampsia.

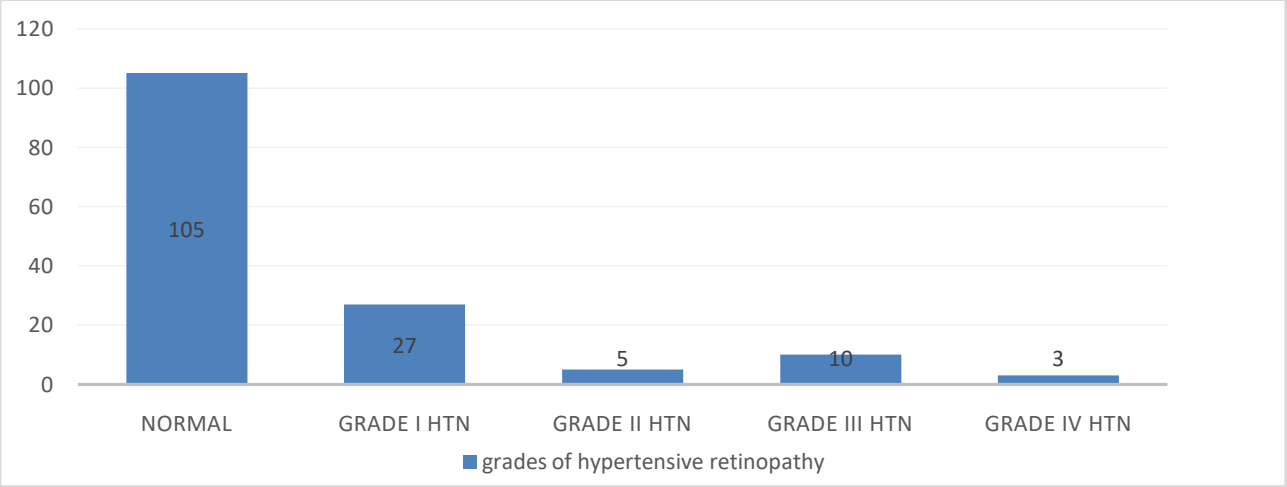
Anterior segment changes were present in 4.06% of patients of mild pre-eclampsia, 5% patients of severe pre-eclampsia and 42.85% patients of eclampsia. Posterior segment changes were present in 27.64% of patients of mild pre-eclampsia, 20% of patients of severe pre-eclampsia and 100% patients of eclampsia. Using the Chi-square test, a significant correlation was found between ocular changes and the severity of pre-eclampsia and eclampsia ($P < 0.05$).

Graph No.1:-Showing distribution of anterior segment changes in PIH patients.



In our study,a total of 4.66% patients had anterior segment findings like chemosis (3.33%), subconjunctival hemorrhage(0.66%) and lid edema(0.66%).Mild pre-eclampsia showed the highest number of anterior segment changes, with 2 patients of chemosis, 1 patient with subconjunctival hemorrhage and 2 patients with lid edema.

Graph No. 2:- Showing distribution of posterior segment changes in PIH patients.



In our study, 70% patients had normal fundus findings. Following the Keith-Wegner-Barker grading system, Grade I hypertensive retinopathy was observed in 18% (27 patients), Grade II in 3% (5 patients), Grade III in 7% (10 patients) and Grade IV in 2% (3 patients).

Table No. 4:-Comparison of different retinal signs on fundoscopy.

	MILD PRE ECLAMPSIA (N= 123)	SEVERE PRE ECLAMPSIA (N=20)	ECLAMPSIA (N= 7)	TOTAL (N=150)
Arteriolar attenuation	30 (24.39%)	4 (20%)	7(100%)	41(27.33%)
AV nicking	3 (2.43%)	0	2 (28.57%)	5(3.33%)
Cotton wool spots	4 (3.25%)	2 (10%)	2 (28.57%)	8 (5.33%)
Hard exudates	4 (3.25%)	3 (15%)	2 (28.57%)	9 (6.0%)
Hemorrhages	7 (5.69%)	3 (15%)	4 (57.14%)	14 (9.33%)
Papilloedema	3 (2.43%)	0	0	3 (2.0%)

Arteriolar attenuation was the most common retinal vascular findings seen in 41 (27.33%) patients.

Discussion:-

A Hospital based, descriptive cross sectional study was conducted at a tertiary care hospital. A total of 150 patients with PIH were screened and evaluated for a duration of 10 months. In the present study, maximum PIHpatients with ocular changes were in the age group of 28-32 years. In our study, the distribution of PIH patients with ocular changes was almost equivalent between primigravida (29%) and multigravida (30%) which is consistent with the study of **Uma et al**[8]and **Bhandari et al**[9]. Young retinal arterioles are more sensitive to high blood pressure. The multigravida women are aware of complications of pregnancy, so they attend antenatal clinic regularly.Out of 150 patients, 82% had mild pre-eclampsia, 13.33% had severe pre-eclampsia and 4.67% had eclampsia.A total of 4.66% of patients had anterior segment findings (3 had eclampsia and 6 had preeclampsia). This suggests that while these signs are possible, they may not be frequent, which is consistent with the findings from studies by **Bakhda**[3] and **Warad et al.**[4]. In our study, 27.64% patients of mild pre-eclampsia, 20% patients of severe preeclampsia and 100% patients of eclampsia showed posterior segment changes. In our study, 70% of patients had **normal** fundus findings. Arteriolar attenuation was seen in 27.33% of patietns and was the most commonly observed retinal sign. According to **Bhandari et al**[9], 44% patients showed arteriolar attenuation as the most common finding that correlates with our study.

Conclusion:-

A study involving 150 patients with pre-eclampsia and eclampsia found that 4.66% of patients exhibited anterior segment changes, while 30% showed posterior segment changes. These rates are somewhat lower compared to other studies. The reduced percentage observed in our study may be attributed to the early and effective obstetrical and medical management of PIH. Ocular examinations provide valuable objective insights into the condition, as the presence of ocular changes serves as an indirect indicator of the severity of PIH and holds prognostic significance.

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