

## Spectrum of eye disease in females with pregnancy induced hypertension-A prospective study

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**ABSTRACT Purpose:-** To explore the epidemiological aspects, clinical profile and visual outcome in females with PIH .**Methods:** 160 eyes of 80 patients were examined from December 2020 to May 2022 suffering from PIH .Visual acuity ,fundus examination OCT NCCT head with orbit, MRI brain with orbit and fundus done in all patients. T-test and Fisher's exact test were used as statistical methods. **Results:** Group 1 patients which was suffering from Grade 1 & 2 hypertensive changes achieve better visual outcome than patients of group 2 which was suffering from grade 3 & 4 hypertensive changes. Those patients which was suffering from ERD achieve the visual acuity of Fc at 1 meter to 6/36

While those patients developed cortical blindness showed no improvement in visual outcome. **Conclusion:** The visual outcome in preeclampsia patients due to PIH depends on the grade of hypertensive changes in the retina. Preeclampsia patients with grade 1 and grade 2 hypertensive changes achieve better visual outcome in comparison to patients with grade 3 and grade 4 hypertensive changes. So timely taken interventions to control PIH results in better visual outcome in preeclampsia patients.

**INTRODUCTION**

Pre-eclampsia is the major cause of maternal morbidity and mortality as well as child morbidity and mortality in India. The visual system affected in 30 to 100 % of patients with preeclampsia.<sup>[1]</sup> Prevalence of retinopathy in eclampsia patients is 50% <sup>[2]</sup>. Most of the patients shows grade 1 or grade 2 hypertensive changes in fundus but in some patients with severe hypertensive changes in fundus with bilateral sudden vision loss were associated with Retinal Detachment, ischemic or occlusive optic neuropathy due to hyperlipidemia or hypercoagulability ,and in some cases presented with sudden painless loss of vision there is cortical blindness followed by severe eclampsia. Incidence of cortical blindness is ranges between 1 to 15 % in case of pre-eclampsia <sup>[3]</sup>. Ocular complications leading to vision loss due to pregnancy are devastating. There is little data available about ocular complications during pregnancy especially in females with PIH (Pregnancy induced hypertension). So in this study we have explored the spectrum of various ocular manifestations in females with PIH to know the epidemiological aspects and prognosis of the diseases.

**REVIEW OF LITERATURE**

Reddy chandrasekhara sagili et al 2012 has described about grade 1 & 2 hypertensive changes in eclampsia patient. There was no additional information about blindness associated with retinal detachment or ischaemic pathology<sup>[4]</sup>. Rasdi R A et al 2011 has described about the insignificant association between presence of hypertensive retinopathy and maternal age , presenting visual acuity and level of systolic / diastolic pressure , there was no detail about severe hypertensive retinopathy changes associated with bilateral sudden vision loss<sup>[5]</sup>.

**MATERIAL AND METHOD**

This study is a prospective study conducted at Maharani Laxmi Bai Medical College, Jhansi ,Uttar Pradesh ,India between December 2020 to May 2022. In this study we have been examined 200 eyes of 100 patients suffering from severe preeclampsia presented with severe bilateral vision loss at the time of admission, between age group of 22 to 40 years .Fourty eyes were excluded because of hazy media due to corneal opacity. Total 160 eyes of 80 patients were examined and divided in two groups:-

Group 1- patients with moderate vision loss (BP ≥ 160/100 mm Hg)

Group 2- patients with severe vision loss (BP ≥ 198/120 mmHg)

Group of patients	No. of eyes of patients	V.A. of both eyes at the time of admission	Ophthalmoscopic examination	NCT head with orbit	MR I brain with orbit	Fundus photo	OCT	V.A. at the time of discharge	No. of patients achieve desirable BCVA	P-value
<b>Group 1</b>	112	6/60 to 6/18	Grade 1 and grade 2 hypertensive changes (generalised arteriolar narrowing, AV nicking, broadening of light reflex, hard and soft exudates)	WNL	WNL	Grade 1 and grade 2 hypertensive changes seen	Grade 1 and grade 2 hypertensive changes	6/12 to 6/6	100 patients achieve BCVA of 6/9 to 6/6	0.01

<b>Group -2</b>	40	FC at 1 m-PL positive	Grade-3 to Grade-4 (papilloedema,retinal edema, flame-shaped hemorrhages, hard and soft exudates,generalised arteriolar narrowing) hypertensive changes	WNL	WN L	Grade-3 to grade 4 hypertensive changes (papilloedema,retinal edema,hard and soft exudates, flame-hemorrhage,generalised arteriolar narrowing)	Grade-3 to grade-4 hypertensive changes (papilloedema,hard and soft exudates, flame-shaped hemorrhage,generalised arteriolar narrowing)	Improved to 6/60 - 6/36	32 patients of 6/24-6/9	0.01
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T-test used as statistical method.

**RESULT:-**In this study we divided the PIH patients into two groups on the basis of fundus changes and visual acuity and found that group 1 patients shows the better visual outcome and even full visual recovery after subsidence of PIH in comparison to group 2 patients suffering from severe preeclampsia with bilateral vision loss (HM+ /PL positive) had attained the V.A. only 6/60 - 6/36 and BCVA only 6/24 - 6/9 even after prompt control of hypertension. 10 patients from the group 2 shows no improvement in visual outcome despite aggressive management of preeclampsia and during follow up of these 10 patients 6 of them developed bilateral exudative retinal detachment(ERD) and 4 patients developed cortical blindness. Out of 6 Patients with bilateral ERD 2 patients with very small ERD was gained the visual acuity of about Finger count at 3meter to 6/36 due self healing process of retina,but 4 patients with bilateral ERD have been referred to vitreo-retinal surgeon and after repair of ERD gained the visual acuity of Fc at 1m -6/60. 4 patients who was developed cortical blindness showed no improvement in visual outcome.

In this study we found that severe generalised arteriolar narrowing is most common manifestation in females presented with PIH and reported in 80-90% of patients. Second most common findings are retinal hemorrhages which developed in 16% of patients of PIH. In 10-15% of patients developed soft and hard and soft exudates and 2-3% of patients developed retinal detachment, retinal tear and cortical blindness.

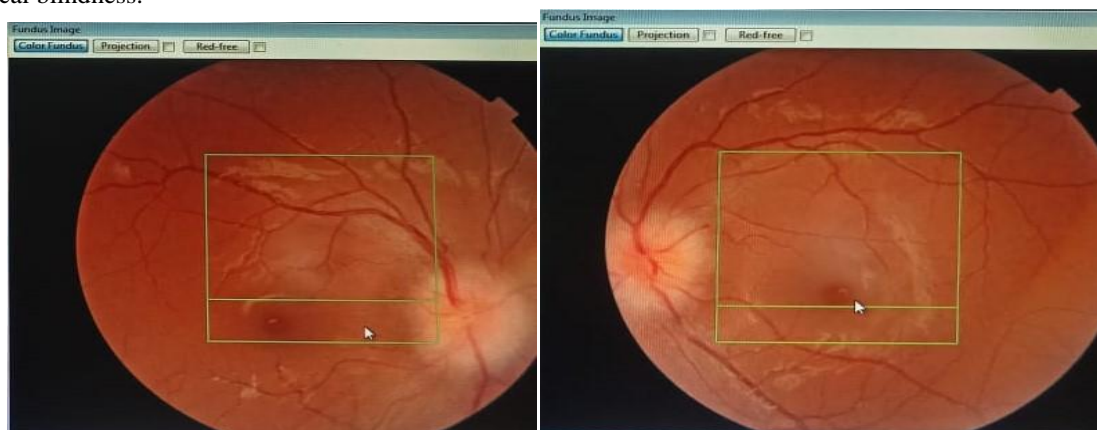


Figure 1 & 2 are the OCT images of a patient of severe preeclampsia showing papilloedema in both the eyes with FR dull in both the eyes.



Figure 3- showing the normal NCCT brain with orbit of a patient of preeclampsia presented with severe bilateral vision loss.

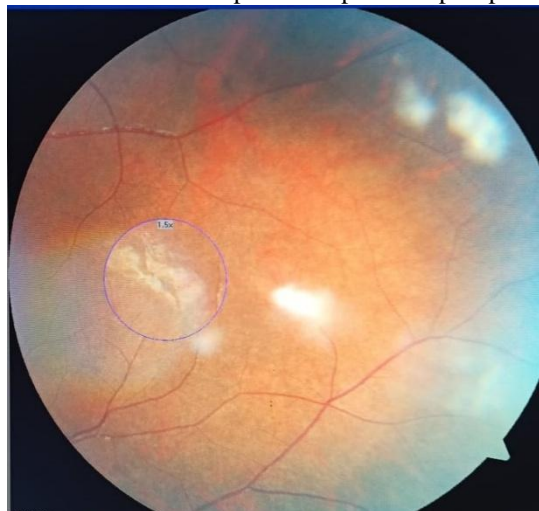


Figure 4 is the fundus photo of preeclampsia patient showing very small retinal tear left eye.

## CONCLUSION

This study concluded that the visual outcome in preeclampsia patients due to PIH depends on the grade of hypertensive changes in the retina and timely taken intervention to control PIH results in favourable visual outcome. Preeclampsia patients with grade 1 and grade 2 hypertensive changes achieve better visual outcome in comparison to patients with grade 3 and grade 4 hypertensive changes if prompt control of PIH is done timely. We also observed that some (2-3%) patients did not show improvement in visual acuity despite prompt control of hypertension. Out of which few (1-2%) patients eventually developed cortical blindness & showed no improvement in visual outcome. Generalised arteriolar narrowing is developed as the most common presentation in females with PIH.

## KEYWORDS

**ERD -Exudative Retinal Detachment, BCVA -Best Corrected Visual Acuity, V.A.-Visual Acuity, PIH-Pregnancy Induced Hypertension**

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