



Ocular Manifestations in Severe Pregnancy Induced Hypertension

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Abstract

Aims: *The aim was to study the ocular manifestations in severe preeclampsia and eclampsia.*

Materials and Methods: *Hospital based cross sectional study. 150 patients, admitted with severe preeclampsia and eclampsia were studied. Patients were examined and the details including the highest recorded BP and lab parameters were collected. Anterior segment examination and dilated fundus examination were done.*

Results: *Ocular symptoms were seen in 22% of severe preeclampsia. Blurred vision was the most common ocular complaint. Fundus changes were seen in 45.4% total study subjects. 40% had arteriolar narrowing, which was the most common fundus finding. Systolic and diastolic blood pressure were higher in those with fundus changes than in those without fundus involvement (p value=.00).*

Conclusion: *SBP and DBP were higher in those with fundus changes compared to those without fundus changes. Increase in BP are indications for frequent and prompt screening of retina to detect early changes, which may reflect similar changes in other organs including placental circulation.*

Keywords: *Pregnancy induced hypertension (PIH), Eclampsia, retinal changes, serous retinal detachment, Macular oedema.*

Introduction

Preeclampsia and eclampsia are important pathological changes of pregnancy which contribute to maternal and fetal morbidity and mortality. Preeclampsia is characterized by hypertension, proteinuria and generalized edema. It is a multisystem disorder which can develop hepatic, renal and neurologic complications. It can also cause several ocular manifestations, some of which are potentially blinding.

Ocular symptoms concern up to 50% patients with eclampsia and 25% with severe preeclampsia¹.

The common symptoms include blurred vision, photopsia, field defects, scotoma and diplopia. Arteriolar narrowing develops in about 40-100% preeclampsia patients^{2,3,4}. Even though retinopathy is the most common manifestation, choroidopathy and optic neuropathy can develop in preeclampsia eclampsia spectrum.

Retina is a unique site where the blood vessels can be directly observed. By observing the retinal vasculature, it may provide a clue to similar status of vessels in other parts of body including placental circulation. Hence simple

ophthalmoscopy not only provides the ocular status but may indirectly indicate the other organ functioning and even wellbeing of fetus. The present study aims to study the ocular manifestations in severe pregnancy induced hypertension and to look for any correlation between these findings and various clinical parameters.

Materials and Methods

This descriptive cross sectional study was done in the Department of Obstetrics and Gynecology over a period of 1year after taking ethical committee approval. 150 cases diagnosed as severe preeclampsia and eclampsia were studied. Patients with the chronic hypertension, preexisting renal diseases, diabetes mellitus, hematological disorders, infectious diseases and any prior ocular diseases were excluded. A written consent was obtained. Detailed history and examination were done including highest blood pressure, obstetric details, maternal and fetal complications. Anterior segment examination was carried out with torch light. Pupils were dilated with tropicamide and fundus examination was carried out with indirect ophthalmoscope.

Results

150 cases of severe pregnancy induced hypertension (PIH) were studied. The mean age was 27.21 (SD 4.35) and the mean gestational age was 33.8 (SD 3.49). The mean systolic BP and diastolic BP were 155.4 mm Hg (SD 13.35) and 97.63 mm Hg (SD 9.03) respectively. There were 57primigravidae and 93 multigravidae out of which 3 were grand multiparous. Distribution of cases based on demography is given in table 1.

Table 1 Demographic profile of patients with PIH

		Number(n)	Percentage(%)
Age (years)	<20	5	3.3
	20-25	52	34.7
	26-30	85	56.7
	31-35	8	5.3
Gestational age(weeks)	<28	7	4.7
	28-34	59	39.3
	34-37	40	26.7
	>37	44	29.3
Parity	Primigravida	57	38.0
	Multigravida	90	60.0
	grandmultipara	3	2.0

64% (n=96) of patients had symptoms. Systemic symptoms included headache among 78 cases (52%), epigastric pain among 22 cases (14.7%) and nausea among 30 cases (20%). Ocular symptoms included defective vision (n=40;26.7%) and flashes of light (n=1; 0.7%). Anterior segment findings were observed among 6 cases. These were lid oedema among 2 cases (1.3%) and chemosis among 4 cases (6%). Retinal changes were present in 73 cases (48.7%). The distribution of cases based on fundus abnormalities is given in table 2.

Table 2 Frequencies of retinal abnormalities in PIH

	Frequency(n)	Percentage %
Arteriolar narrowing	60	40
Macular oedema	19	12.7
AV crossing changes	6	4
Cotton wool spots	2	1.3
Retinal hemorrhage	3	2
Choroidal infarcts	2	1.3

The mean age of subjects with fundus changes was 26.85 years (SD 4.402) and those without fundus changes was 27.55 years with SD of 4.372 (figure 1). This was not statistically significant (p 0.33).

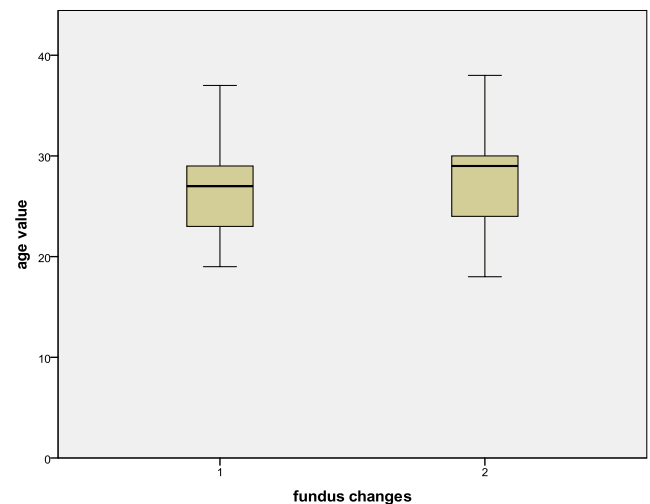


Figure 1- Relation between age and retinal changes (X axis -1- With retinal changes, 2- Without changes)

The mean gestational age of subjects with fundus changes was 33.18 years (SD 3.22). The mean gestational age of subjects without fundus changes was 34.48 years (SD 3.62) figure 2. This was statistically significant (p 0.001).

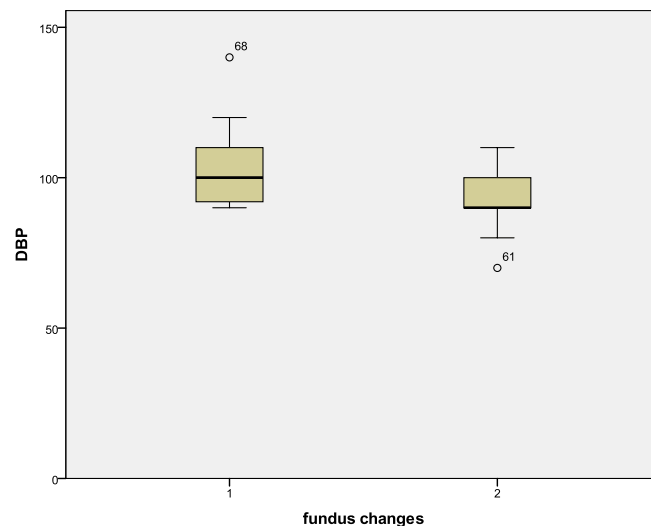
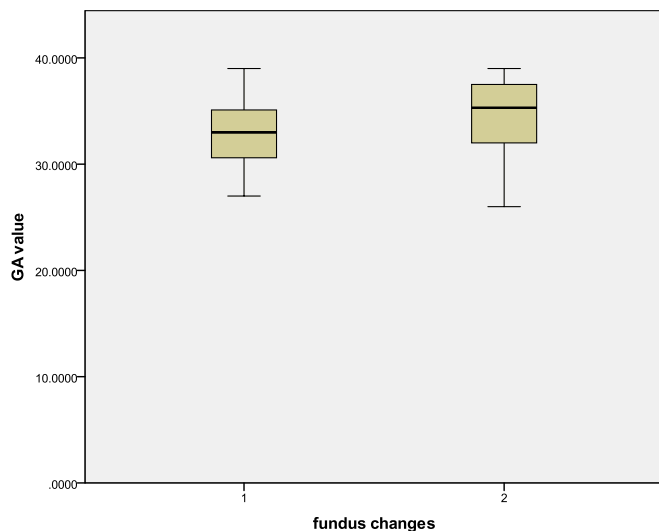


Figure 2- Relation between gestational age and retinal changes. (Xaxis: 1- With retinal changes, 2- Without retinal changes)

The mean systolic BP (SBP) and mean diastolic BP (DBP) were high among those with fundus changes. The mean SBP of subjects with fundus changes was 164.41 mm Hg (SD 12.6). The mean SBP of subjects without fundus changes was 146.86 mm Hg (SD 6.8). This was statistically significant (p 0.001). The mean DBP of subjects with fundus changes was 101.62 mm Hg (SD 9.63). The mean DBP of subjects without fundus changes was 93.84 mm Hg(SD 6.19). This was statistically significant (p 0.001).Fig:3,4

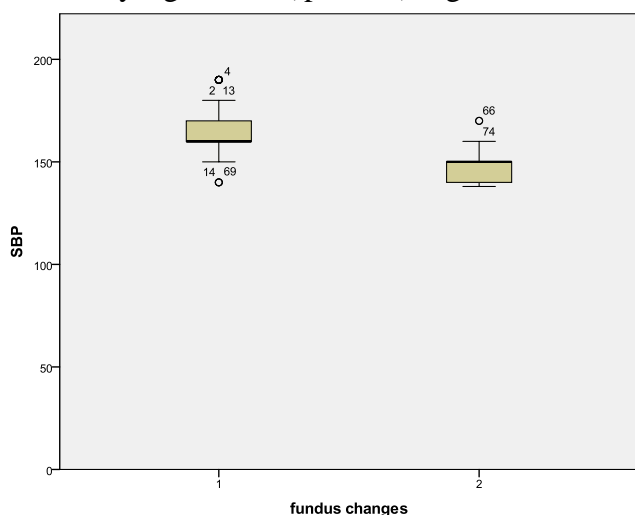


Fig 3 & 4 Relation between blood pressure and fundus changes. (X-axis-1- With retinal changes 2-Without retinal changes)

Proteinuria (measured by urine albumin by dipstick method) did not show any relation with retinal changes.

Discussion

The most common age group of patients were 26-30 years and the gestational age was 28-34 weeks in our study. Most of the patients were multiparous than primigravida. In the present study, blurring of vision was the most common visual symptom observed. Flashes and floaters were other ocular complaints of patients with gestational hypertension which constitute about 64% of patients. Akshay et al, in his study noted 54% of patients with preeclampsia had ocular symptoms³. Visual symptoms were reported in 25% preeclampsia and 50% eclampsia¹. Complete blindness is rare, the incidence being 1 to 3%⁷. No cases of cortical blindness was observed in the present study.

The systemic symptoms were headache, epigastric pain and nausea. Fundus findings were seen in 48.7% of study subjects. Retinal changes were more common in younger age group and multiparous patients with PIH, both were statistically significant. Arteriolar narrowing (41%) was the most common posterior segment finding followed by macular oedema and serous retinal detachment. Shah noted a similar observation in their study⁵. But Sujatha et al had a

different observation in which they noted increased retinal changes in primi⁶. Earlier studies have reported arteriolar attenuation in 40- 100% preeclampsia^{2,3,4}. Jaffe had observed significant arteriolar changes in severe preeclampsia but not in mild preeclampsia⁸.

Macular edema was the second common finding noted in 12.7%. 66% of eclampsia patients developed macular edema and 9% of preeclampsia subjects developed macular edema. Similar incidence of macular edema was reported by Akshay (12%)³ et al and Phani⁹ et al.

Arterio venous changes were seen in 4% in the present study, Reddy¹⁰ had noticed 6.4% with grade II arteriolar changes in their study. Phani⁹ had noted a higher incidence of 15% in their study. Other typical hypertensive changes such as hemorrhages, exudates were seen only in very small percentage of study population, as previously been observed by Jaffe⁸. Retinal superficial hemorrhages seen in 1.4%. There were no subjects with cotton wool spots, hard exudates/disc edema in the study. According to Jaffe, presence of these should raise a suspicion of other systemic diseases. Reddy et al., Naval et al., Francis et al., found comparable results in terms of exudates and hemorrhages whereas Akshay³ and Phani⁹ have noted greater incidence of these findings. Choroidal changes (Elschnigs spots) were not seen in any.

Serous retinal detachment was seen in 2.1% of cases. The study results are comparable to Fry¹¹ and Halum¹², who in their studies quote the incidence of SRD as 10% in eclampsia and 1% in severe preeclampsia. SRD noted were bilateral and extra macular, one of which was multifocal. Saito¹³ noted RD in 65% and RPE lesions in 58%, very high incidence rates compared to the present study. Akshay³ in his study noted a higher incidence of (7%) SRD.

It was noted that those with retinal changes had higher systolic and diastolic BP than those without fundus changes. It was found statistically significant by Chi-square test ($p=0.000$). The association between BP and fundus changes in the

present study does not go along with Gupta's study results, which said that severity of retinopathy did not correlate with degree of SBP and DBP¹⁴. But similar results were observed by Bhandari who quoted that severe grades of retinopathy was seen with increase in BP. Reddy, Tadin and Mussey et al also noted that there is a significant relation between blood pressure and fundus changes^{15,16,17}. In the present study, it was observed that there is no relation with the proteinuria and the occurrence of fundus changes. This does not go along with Bhandari's¹⁸ study in which they observed higher grades of proteinuria had more fundus involvement. Mithila¹⁹ had noted a similar observation between retinopathy and proteinuria.

Conclusion

Ocular symptoms were seen in 22% of preeclampsia. Fundus changes appeared in 45% study population. Arteriolar narrowing (41%) was the most common fundus change, followed by macular edema. Serous macular detachment was seen in a minority. SBP and DBP were higher in those with fundus changes compared to those without fundus changes. Patients even without symptoms had fundus changes. Hence routine fundus examination should be done in all preeclampsia-eclampsia patients with high BP.

Frequent and prompt screening of retina in PIH patients is indicated to detect early changes in retina, which may reflect similar changes in other organs including placental circulation.

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