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Original Research Article

Prevalence of Hypertensive Retinopathy Changes in Pregnancy induced Hypertension

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ABSTRACT

Aim: To determine the prevalence of retinal changes in pregnancy-induced hypertension (PIH) and to determine any association between retinal changes and blood pressure (BP), proteinuria, blood urea, serum creatinine and severity of the disease.

Materials and Methods: Patients admitted and diagnosed with PIH are included in the study over a period of 3 years. Age, gravida, gestational age, blood pressure, proteinuria, blood urea, serum creatinine were noted from the case records. History for any eye disease was taken, fundus examination done after dilating the eyes with 1% tropicamide, in a semi dark room in the ward

Results: A time period of 3 years from (June 2011 to June 2014) was taken and all the patients coming to OBG OPD with PIH were examined. Of 154 patients the mean age of patients were 23.68±3.49year(range 18-38year). The gestational period ranged between 20-38 weeks with mean 33.93±3.62. Primigravida 85(56.7%), 47(32.1) 2nd gravida, 22(13.01%) were 3rd gravida. 84(54.54%) Had mild preeclampsia, 61(39.61%) had severe preeclampsia, 9(5.84%) had eclampsia. Retinal changes were seen in 42(27.27%). There was statistically significant positive association of retinal changes and blood pressure(p=0.0001), proteinuria (p=0.0001), severity of the PIH (p=0.0001) and no significant association found between retinal changes and blood urea(p=0.507), serum creatinine(p=0.614), serum A/G (p=0.185).

Conclusion: Retinal changes were seen in 42(27.27%) of patients with PIH and they were significantly associated with blood pressure, proteinuria and severity of PIH.

KEY WORDS: Preeclampsia, Eclampsia, Retinal changes, Proteinuria.

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INTRODUCTION

Hypertension, according to American college of Obstetrics and Gynecology Committee task force, is defined as either a systolic pressure of ≥140 mmHg or an increase of ≥30 mmHg (from a base line in the first half of the pregnancy) or as a diastolic pressure of ≥90 mmHg or an increase of ≥15 mmHg from the base line [1].

Preeclampsia[PIH] is characterized by edema, proteinuria and hypertension. Significant proteinuria is defined as >0.3 g protein per 24hr or 0.1 g/L (>2+ on the dipstick) in at least two

random samples collected 60 minimum hours apart [1].

Hypertension is the most common medical disorder during pregnancy, affecting 6-8% of all pregnancies. 16-25% of 1st pregnancy &12-15% of subsequent pregnancies [2]. HTN during pregnancy can be classified into 4 categories- Chronic HTN, Gestational HTN, Preeclampsia, Eclampsia and superimposed preeclampsia [1]. Preeclampsia is gestational HTN (140/90 mmHg or a rise of 30mmHg of systolic pressure or a rise of 15 mmHg of diastolic pressure taken on two occasions after rest, in combination with generalized edema or proteinuria of at least 300mg /24hr. Seizures or coma as a consequence of preeclampsia is termed as eclampsia [2]. PIH is multisystem disorder of unknown etiology. Preeclampsia is maternal response to placentation. The pathological changes of these diseases appear to be related to vascular endothelial dysfunction and its consequences. The retinal vascular changes generally but not always, correlate with severity of systemic HTN. Vasospastic manifestations are reversible and the retinal vessels rapidly returned to normal after delivery [3].

MATERIALS AND METHODS

This prospective cohort study, was conducted over a period of 36months (Jun 2011 to Jun 2014). All the patients admitted to the obstetric ward CAIMS with diagnosis of PIH were included. Patients who had pre existing diabetes mellitus, HTN, cardiovascular disease, collagen vascular disease, renal disease and hazy media that did not permit fundus visualization were excluded from the study.

After taking history for any eye symptoms, anterior segment was examined with torch light on the bedside., to rule out any gross anterior segment pathology. Both the pupils were dilated with 1% tropicamide eye drops and ophthalmologist did fundus examination with direct ophthalmoscope in a semi dark room in ward. The retinal changes (HTN retinopathy) were graded according to Keith Wagner HTN retinopathy classification changes seen in right or left or both eyes and was taken as positive findings in that patient. Age, parity, gravida, BP, proteinuria, blood urea, serum creatinine, serum A/G were noted from case records and entered into data sheets and were analyzed through Openepi statistical software version 2.3. This study was approved by Ethical Committee, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, India.

RESULTS

Out of 154 patients examined the mean age of patients was 23.68±3.49 year(range 18-38yr). The gestational period ranged between 20-38 weeks with mean 33.93±3.62. 85 primigravida (56.7%) 47(32.1%) 2nd gravida, 22(13.01%) were 3rd gravida. 84 (54.54%) mild preeclampsia, 61(39.61%) had severe preeclampsia, 9(5.84%) had eclampsia. 154(100%) of the patients had pedal edema followed by 93(60%) of the patients had hemodilution, 61(40%) of patients had blurring of the vision as initial symptom.

Retinal changes were seen in 42(27.27%) patients. The association with retinal changes and different parameters are shown in Table 2. Two patients had retinal detachment. Two patients with vision of CF 2mts in both eyes, 1 patient regained her vision till 6/9 by the end of 1week. 2nd patient gained vision 6/12 in one eye and 6/36 partial in the other eye.

Table 1: Showing no of patient who have retinopathy changes (n=154).

Grading of Retinopathy	Patient with changes	%
No changes	112	72.72%
Grade I	19	12.33%
Grade II	19	12.33%
Grade III	0	0%
Grade IV	2	1.29%
Retinal Detachment	2	1.29%

DISCUSSION

Pregnancy induced hypertension is responsible for maternal mortality in developing countries [5]. Visual symptoms are reported in 25% of eclampsia, 50% of preeclampsia of PIH. In early studies of preeclampsia the incidence of foveal retinal arteriolar abnormalities was reported to be 30-100% [3]. The other changes of HTN retinopathy are retinal edema, hemorrhages, exudates, cotton wool spots, papillophlebitis, elsching spots, macular edema, RPE lesions, serous retinal detachment [6], retinal artery and

Table 2: Showing association of retinopathy with different variables of PIH (n=154).

Parameter	Retinal changes					total	P value
	Nil=112	Gr I=19	Gr II=19	Gr IV= 2	RD=2		
Blood pressure							
<150/100mmHg	84	10	4	0	0	97	
>150/100mmHg	28	9	16	2	2	57	0.0001
Proteinuria							
Nil	85	6	4	0	0	95	
+	26	3	2	0	0	31	
++	1	10	7	0	0	18	
+++	0	0	6	1	1	8	
++++	0	0	0	1	1	2	0.0001
Severity of disease							
Mild preeclampsia	71	6	7	0	0	84	
Sever preeclampsia	41	10	10	0	0	61	
Eclampsia	0	3	2	2	2	9	0.0001
Age							
18-24	67	11	17	1	1	97	
25-31	40	8	2	1	1	52	
32-38	5	0	0	0	0	5	0.412
Gestational age							
20-28	8	2	3	0	0	13	
29-32	24	4	5	1	0	34	
32 onwards	80	13	11	1	2	107	0.856
Gravida							
Primi	53	17	12	2	1	85	
Multi	46	0	0	0	1	47	
Grand multi	13	2	7	0	0	22	0.0001
Blood urea							
=<40mg/dl	107	16	18	2	2	145	
>40mg/dl	6	3	1	0	0	9	0.507
Serum creatinine							
=<1.2mg/dl	96	16	17	2	1	132	
>1.2mg/dl	16	3	2	0	1	22	0.614
A/G ratio							
=<1.7	112	18	18	2	2	152	
>1.7	0	1	1	0	0	2	0.186

vein occlusion, optic neuritis, optic atrophy and isolated cases of acute ischemic optic neuropathy [7], Bilateral exudative Retinal detachment, transient blindness [8,9], cortical blindness [10-12] seen in severe Pregnancy ind-uced hypertension. Tadin et al [13] a study of 40 women with preeclampsia, 45% showed abn-ormalities.The average age of 40 patients was 29.1 years.In another study by Jaffe and Schatz, mean age of the patient was 28 years [14]. Preeclampsia a disease of 1st pregnancy 16-25% and 12-15% of subsequent pregnancies [15].

In our study of 85 patients 55.19% were primigravida with PIH had retinal involvement 32(37%) that correlating with 30-100% [3]. Most common ocular finding is severe arteriolar spa-sm [3], evidenced by either segmental or gene-ralized constriction of retinal arterioles (Wagner represented spastic lesion of retinal arteriole in 70% of PIH) [18]. The prevalence of HTN retinopathy[15] changes 42(27.27%) in our study showed significant association with severity of preeclampsia(p=0.0001) similar to Reddy et al [16].

Landismer R et al have found correlation between degree of retinopathy and severity of preeclampsia Tadin et al found a statistical correlation between proteinuria, BP, HTN retinopathy [13]. The degree of retinopathy was directly proportional to severity of pre eclampsia. Amongst 154patients, proteinuria ranged from 1+ to 4+ which correlates with Tadin et al [13] we have seen exudative retinal detachment in eclampsia patient with HELLP syndrome. Saito and Tano reported 43% with retinal and choroidal changes in a series of 41% pre-eclamptic and eclamptic patients [17]. Exudative retinal detachment tends to be bilateral, diagnosed post partum, more frequent in primiparous women and tends to resolve completely post partum [18]. We came across 1 patient who complained of cortical blindness, in immediate post partum 1 day, which resolved within 5 hours. Cortical blindness, which affects up to 15% of preeclamptic and eclamptic women, is often preceded on accompanied with headaches, hyperreflexia and paresis. An MRI may show focal occipital lobe edema, including bilateral edema of LGB retinopathy hypertensive lesion on T2 weighed image. The constellation of findings (headache, seizures, cortical blindness and altered mental state) associated with preeclampsia, eclampsia and other diseases is referred to as reversible posterior leuko-encephalopathy syndrome.

CONCLUSIONS

Retinal changes were seen in 42(27.27%) of patients with PIH and they were significantly associated with blood pressure, proteinuria and severity of PIH. But with blood urea and serum creatinine, serum A/G we did not find any significant correlation. Retinal changes were observed more in the primi gravida PIH patients compared to multi gravida.

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