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A Clinical Study of Retinal Changes in Pregnancy Induced Hypertension

Dr. Suhas S. Sarawade, Dr. Sharad Jadhav, Dr. Supriya Chitupe, Dr. Vidhi Mehta

Professor and Head, Department of Ophthalmology, Dr. Vaishampayan Memorial Government Medical College, Solapur, Maharashtra.
Assistant Professor, Department of Ophthalmology, Dr. Vaishampayan Memorial Government Medical College, Solapur, Maharashtra.
Senior Resident, Department of Ophthalmology, Dr. Vaishampayan Memorial Government Medical College, Solapur, Maharashtra.
Junior Resident, Department of Ophthalmology, Dr. Vaishampayan Memorial Government Medical College, Solapur, Maharashtra.

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ABSTRACT
Aim- To determine the prevalence of retinal changes in Pregnancy induced hypertension patients and to correlate between the retinal changes and the severity of the disease.
Materials and methods-Hospital based observational study. The study was carried out in 500 patients admitted in the obstetric ward diagnosed with Pregnancy induced hypertension.Age, gravida, gestational period, blood pressure and proteinuria were noted. The fundus examination was done using direct ophthalmoscope and the results were analysed.
Results-A total of 500 patients were included in this study. Mean age of the patients was 25 years. 310 (62%) case wereprimigravidas and the rest 190 (38%) cases were multigravidas. 270 (54%) cases studied had mild hypertension, 200(40%) cases had severe hypertension and the rest 30(6%)had hypertension with seizures (eclampsia). 121 (65%) cases had grade 1 hypertensive retinopathy changes, 42 (25%) had grade 2 hypertensive retinopathy changes,12(7%) had grade 3 changes and there were 5 cases of grade 4 retinopathy.
Conclusion-In this study, hypertensive retinal changes were found in 180 (36%) patients with pregnancy induced hypertension. Nowadays,occurrence of hypertensive retinopathy in PIH has decreased due to better antenatal care and early detection and treatment of PIH cases.

I. INTRODUCTION

Pregnancy Induced hypertension is a hypertensive disorder in pregnancy that occurs in the absence of other causes of elevated blood pressure (140/90mmHg or a rise of 30mmHg of systolic pressure, or a rise of 15mmHg of diastolic pressure), taken on two occasions after rest after 20 weeks of pregnancy.

Hypertensive disorders in pregnancy are considered the major cause of maternal morbidity and mortality in developing as well as developed countries complicating 7 – 10% of all pregnancies. In India, hypertensive disorders during pregnancy is responsible for 8to 9% of maternal deaths and whereas, 15 to 20% of maternal deaths throughout the world.

Jones compared pregnancy induced hypertension to "a snowball rolling downhill, the earlier one intervenes, the easier it is to stop it."

The retinal vascular changes correlate with the severity of hypertension.The best index of vascular changes is provided by the examination of the fundus. Ophthalmoscopic examination is simple, reliable, sensitive, diagnostic and also has a prognostic value. This study was undertaken to determine the prevalence of retinal changes in PIH and association between the retinal changes and age, parity, blood pressure, proteinuria and severity of the disease.

II. MATERIALS AND METHODS

This cross-sectional, observational study was carried out in 500 patients admitted in the obstetric ward of Civil Hospital, Solapur diagnosed with Pregnancy induced hypertension. It was conducted over a period of 24 months. Age, gravida, gestational period, blood pressure and proteinuria were noted.Relevant ocular history was extracted. Visual acuity was checked using Snellen chart and for patients who could not be shifted, bedside vision was taken. The fundus examination was done after dilating the pupils with eyedrops, 1% tropicamide topical agent, with a direct

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ophthalmoscope in the ward, bedside. Informed consent was taken from the patient. A pre-structured and pretested proforma was used to collect the data. Retinal changes were graded according to the Keith-Wagener-Barker classification.

III. RESULTS

In the present study out of 500 patients, hypertensive retinal changes were found in 180 (36%) patients with pregnancy induced hypertension. The mean age of the patient was 25 years. 62% of the cases of Pregnancy induced hypertension were found in primigravida and the rest 38% in multigravida.270 patients fell in the category of mild preeclampsia, 200 in the group of severe preeclampsia and 30 patients had hypertension with seizures. Maximum number of patients had grade 1+ proteinuria, 180 patients had grade 2+ proteinuria and only 75 patients had grade 3+ proteinuria.

121 (65%) cases had grade 1 hypertensive retinopathy changes, 42(25%) had grade 2 hypertensive retinopathy changes,12(7%) had grade 3 changes and there were 5 cases of grade 4 retinopathy

Severity of Hypertension	Number of patients
Mild preeclampsia Systolic BP- 140-159mmHg or Diastolic-90-109mmHg	270
Severe preeclampsia Systolic BP > 160mmHg Diastolic->110mmHg	200
Eclampsia-new onset seizures	30

Fundus findings	No. of patients
Normal fundus	180
Attenuation of arterioles	121
Arteriolar sclerosis	20
AV crossing changes	22
Cotton wool spots	5
Hemorrhages	7
Papilloedema	5

Fundus findings	Gravida					
	Primigravida		Multigravida		Total	
	N	%	N	%	N	%
Normal	170	54.8	150	78.9	320	64.0
Hypertensive retinopathy	140	45.16	40	21.05	180	36.0
Total	310	100.0	190	100.0	500	100.0

	type of PIH

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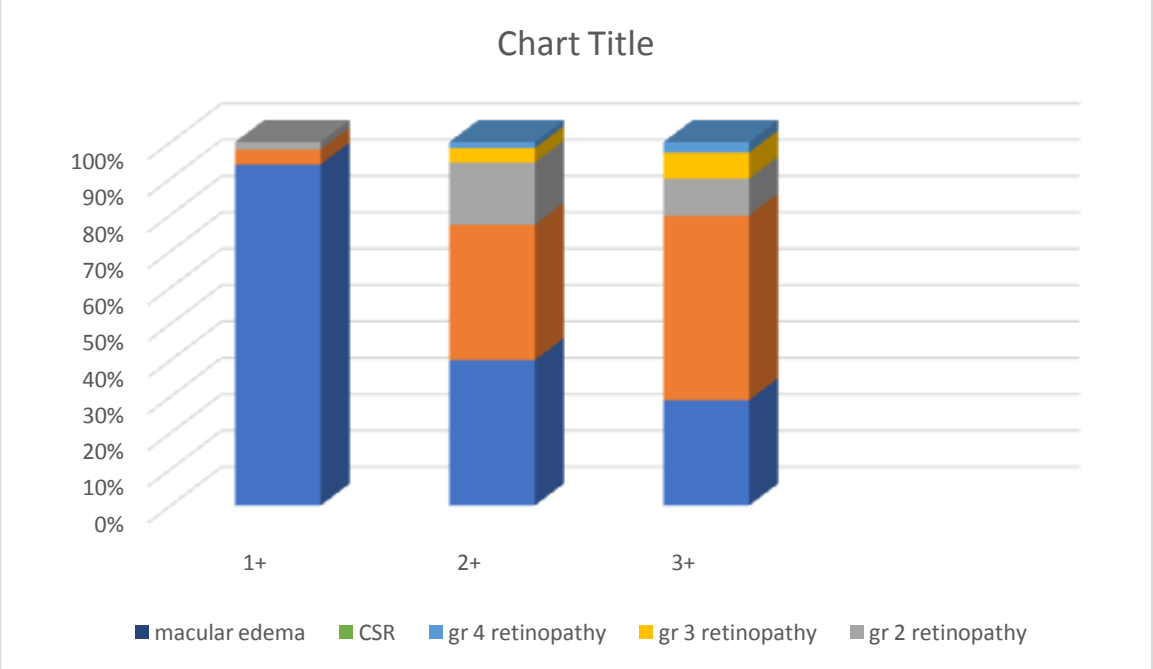
Fundus finding	Mild HTN (DBP <100)		Severe HTN (DBP >=100)		Eclampsia		Total	
	N	%	N	%	N	%	N	%
Normal	199	73.7	116	58	5	16.6	320	64
Gr 1 HTN Retinopathy	60	22.2	49	24	12	40	121	24
Gr 2 HTN Retinopathy	11	4.07	27	13.5	4	13.3	42	8.4
Gr 3 HTN Retinopathy	0	0	7	3.5	5	16.6	12	2.4
Gr 4 HTN Retinopathy	0	0	1	0.5	4	13.3	5	1
Total	270	100.0	200	100.0	30	100.0	500	100.0

Correlating fundus findings with proteinuria



IV. DISCUSSION

In the present study out of 500 patients, hypertensive retinal changes were found in 180 (36%) patients with pregnancy induced hypertension. This is comparable to the study done by Tadin et al from Croatia. He reported 45% of retinal changes in their study on 40 patients withPregnancy induced hypertension. It was observed that patients with mild hypertension had only grade 1 and grade 2 hypertensive retinopathy changes. Grade 3 and grade 4 hypertensive retinopathy changes were seen in 8 cases of severe hypertension and 9 cases of eclampsia.Thus, higher grades of hypertensive retinopathy were noted in severe preclampsia and eclampsia patients. Higher grades of proteinuria was significantly associated with severe retinopathy changes as reported by Reddy et al and Karki et al.

121 (65%) cases had grade 1 hypertensive retinopathy changes and 42 (25%) had grade 2 hypertensive retinopathy changes, 12(7%) had grade 3 changes. 5 cases of grade 4 retinopathy were seen. The cases with grade 4 retinopathy were noted in patients with eclampsia and blood pressure above 160/110mmHg where termination of pregnancy was advised in these cases. Two weeks after the termination of pregnancy, fundus picture showed no disc edema. Superficial haemorrhages and cotton wool spots were present. Cases of exudative retinal detachment were not found in the

present study. Of the retinal changes, attenuation of arterioles was the commonest finding. Superficial hemorrhages were more commonly encountered than the exudates. The present study of 500 patients showed a positive correlation between fundus findings, severity of hypertension and grades of proteinuria. This is similar to the study done by Tadin et al where he reported that the degree of retinopathy was directly proportional to severity of preeclampsia and proteinuria. Their study stated that hypertensive retinopathy is a valid and reliable prognostic factor in determining the severity of preeclampsia.

Studies done by Shukla and Prasad showed that 52% and 70% of the patients had retinal changes. Their study noted a higher number of cases with retinal changes as the study was carried out in a rural set up where facilities for early diagnosis and treatment were not easily available and patients did not come for regular follow up.

In a study done on 275 cases of preeclampsia and 125 cases of eclampsia by Reddy from India, he reported retinal changes in 53.4% preeclampsia and in 71.2% eclampsia patients.

V. CONCLUSION

Pregnancy induced hypertension is one of the leading causes of maternal and foetal morbidity and mortality, even in developed countries. Retinal changes is a very good indicator of the severity of hypertension and proteinuria. So, the examination of fundus is a valuable and necessary diagnostic procedure in pregnant women with preeclampsia for monitoring and managing the cases as the retinal vessels during PIH form a gateway to visualize changes in the body and placental vessels and play a key role in early detection and treatment for PIH for protection of mother as well as the foetus.

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