

## FUNDOSCOPY IN PIH - ITS CORRELATION WITH PERINATAL OUTCOME

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### SUMMARY

Fundoscopy was carried out in 30 patients who had hypertension in pregnancy. All patients were followed up clinically and by funduscopy till they delivered. Mode of delivery and perinatal outcome was noted. Increasing severity of retinal changes was associated with a poor perinatal outcome. Both the patients with Grade III and IV changes had stillbirths. A higher incidence of low birth weight infants was also found in patients with retinal changes. 46.6% of babies born to mothers with retinal changes were less than 2 kg.

### INTRODUCTION

Wagener in 1933 stated that spasm and narrowing of retinal arterioles is the most common and early finding in fundus of patients with toxemia.

Hallum in 1936 stated that the ophthalmoscope should be rated next to the sphygmomanometer as an instrument of diagnostic importance in the management of a case of hypertensive toxemia of pregnancy.

The earliest retinal sign consists of marked attenuation of arterioles which

usually starts in the nasal periphery and spreads towards the disc becoming generalised. The narrowing of the vessels may be more marked locally at intervals and this is termed focal spasm. Recognition of the condition at this stage together with institution of adequate hypotensive measures may prevent the onset of the more serious sclerosis and retinopathy and general prognosis of the illness.

The appearance of retinopathy indicates a poor prognosis for foetus and mother and immediate termination of pregnancy is indicated when the changes are of a severe grade. On the other hand in

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preeclampsia without gross retinopathy the prognosis for mother and child is likely to be better.

**MATERIAL AND METHODS**

30 patients with hypertension in pregnancy were studied at the K.E.M. Hospital and Seth G.S. Medical College at the departments of Obs-Gynec and Ophthalmology. Only 15 patients had retinal changes. These cases were followed up clinically and appropriate investigations such as ultrasonography and cardiocography were carried out. Fundoscopy was carried out at regular intervals till they delivered or were induced. The mode of delivery, perinatal outcome and the birthweight were noted and correlated with the retinal changes.

**Ophthalmoscopic Examination-** Both pupils of the mother were dilated adding 1 drop of 10% phenyl ephrine in each eye at 15 minute intervals. They were then examined by ophthalmoscope to detect retinal changes. Patients who had positive find-

ings were subjected to a repeat examination at 7 days interval in the post partum period.

The changes were graded by Wagener 1933 Classification.

**OBSERVATION AND ANALYSIS**

Retinal changes are marked when the blood pressure is 200/130 or more, degree of severity runs parallel to the severity of blood pressure. Both our patients with grade III & IV retinopathy had systolic BP more than 200 mm and diastolic BP more than 120 mm.

In our study, 86.8% of patients with blood pressure more than 160/100 showed retinal changes in contrast to only 13.3% of patients with a BP less than 160/100. This correlated with a study by Reddy et al (1984) in which 96.3% of patients with BP more than 160/100 showed retinal changes.

This was also confirmed by - Shukla and Prasad (1976), upto 5% cases with BP less than 150/100 showed retinal changes

**Keith Wegener Barker Classification**

Grade I	Grade II	Grade III	Grade IV
Moderate arteriolar attenuation	Pronounced attenuation	As grade II+	Grade III
Focal Spasm	Focal and diffuse spasm	Retinal oedema	+
Copper wire arteriolar reflex	Moderate sclerosis	Linear retinal haemorrhages	Papilloedema
Slight arteriolar sclerosis	Arteriovenous nipping	Cotton wool spots	Macular star

### RELATIONSHIP OF RETINAL CHANGES WITH SEVERITY OF HYPERTENSION

Patients with retinal changes	Blood - Pressure	
	less than 160/100	more than 160/100
Current Study	13.33%	86.66%
Reddy et al	43.5%	96.3%

in contrast to 65% of cases when the BP was more than 150/100.

In our series, 9 patients showed very early signs of focal vasospasm i.e. Grade I, 4 patients showed Grade II : 1 showed Grade III and 1 and changes of Grade IV hypertensive retinopathy.

#### MODE OF DELIVERY

Of the 15 patients with retinal changes 8 required induction because of uncontrolled hypertension and development of

IUGR, 1 underwent an elective caesarean section and 4 underwent emergency caesarean sections. In Hallum's study of 21 patients with moderate to severe hypertension 18 were induced.

#### PERINATAL OUTCOME

We also found that in cases of retinitis with definite vessel changes the prognosis was worse. Both our patients with Grade III+IV hypertensive retinopathy had

#### PERINATAL OUTCOME IN PATIENTS WITH RETINAL CHANGES

Retinal changes	Liveborn	Neonatal deaths	IUFD
Present	13	4	2
Absent	13	-	2

#### RELATIONSHIP OF BIRTHWEIGHT TO RETINAL CHANGES IN PIH

Retinal changes	Birth Weight			
	< 2 kg	2.1-2.5 kg	2.6-3 kg	> 3 kg
Present	46.6%	20%	26.66%	6.66%
Absent	26.66%	39.9%	33.3%	0

stillbirths.

Compared to PIH patients without evidence of retinopathy who had 2 losses patients with vascular changes had 6 perinatal deaths which included 2 intrauterine fetal deaths.

### **BIRTH WEIGHT**

There was a higher incidence of low birth weight babies in patients with retinal changes i.e. 46.6% babies and a birth weight less than 2 kg. About 65% of babies had birthweight less than 2.5 kg in both groups. However in our 6 patients with changes of Grade II and above, all babies had birth weight less than 2 kg: of these, were 2 stillbirths and 1 neonatal death.

### **SEX RATIO**

It is interesting to note that 66.6% of babies born to patients with retinal changes were male. However this male predominance was also noted in babies of PIH mothers without retinopathy. This was also observed by Adak & Dutta Gupta 1989 in their study in which 81.2% of babies born to patients with retinal changes were male.

### **DISCUSSION**

Seldman et (1991) has reviewed current knowledge on renal and ocular pathophysiologic changes induced by hypertension in pregnancy and concluded that renal and ocular lesions have been found to have important prognostic implications.

Landesman et al (1952) found the retinal vascular changes to be of value in the assessment and management of the toxæmias of pregnancy.

Sadowsky et al (1956) showed that frequent examination of the ocular fundi can be helpful not only in the evaluation of the mother's condition, but also of fetal prognosis. Severe toxæmia with grade 2 to 4 retinas was shown to be associated with a 2 fold higher fetal mortality rate compared with mild toxæmia.

According to Sorsby 1972 Angiospasm involving the conjunctival and retinal vessels is the basis of ocular signs in pregnancy toxæmia. The degree of retinal vascular changes which comprise the bulk of ocular findings depends on the blood pressure. These changes are liable to occur when the systolic blood pressure is > 160 mm Hg and diastolic blood pressure is >100 mm Hg. Persistent attenuation of vessels results in obscuration of vision. Retinal ischaemia resulting from this persistent angiospasm presents itself as an accompanying retinopathy characterised by retinal haemorrhages of the flame shaped variety, soft exudates and occurrence of a macular star. Swelling of optic disc indicates the onset of malignant stage of illness.

Any sign of retinal vascular disease indicates a dangerously ill patient. Conservative management with hypotensive drugs is usually adequate in patients with gradual onset of retinal vasospastic changes. However fulminating vasospasm developing in a matter of hours or days signifies a malignant type of illness and in such cases delivery of the patient is essential for 4 reasons :

1. To prevent eclampsia
2. To offset any permanent generalised arteriolar damage to the mother's circulation which would predispose her to residual hypertensive disease in later life.

3. To avoid chances of any permanent visual loss to the mother.

4. To prevent foetal anoxia and death.

Hallum in 1936 stated that when hypertension develops or increases in pregnancy, careful watch should be kept for angiospastic lesions of retinal arterioles. Pregnancy should be terminated if progress of these lesions cannot be controlled by conservative measures and certainly before the onset of retinitis. If retinitis develops before the 28th week of pregnancy, only 25% chance exists of the patient giving birth to a live baby. If pregnancy is continued to the stage of viability almost 100% chance exists of a permanent vascular or renal injury developing.

Francis (1959) and Shukla & Prasad (1976) both reported retinal changes in few cases of eclampsia along with preeclampsia.

In an extensive study by Reddy et al 1984 of 100 cases of eclampsia, they observed that 72% of patients showed evidence of retinal changes. A majority of their patients with severe changes delivered stillborns, probably as a result of anoxia due to impaired placental circulation. Probably changes seen in the retinal vessels are reflection of a similar pathology of the placental vessels. In the series by Adak & Dutttagupta (1989) 25% of PIH mothers developed retinal changes, of these 3 had perinatal deaths.

### CONCLUSION

In our series 50% of patients had retinal changes, of these there were 6 perinatal deaths, 4 were neonatal deaths and 2 intrauterine fetal deaths.

Thus perinatal outcome is worse in patients with retinal changes and an increasing severity of retinal changes is associated with a worsening outcome.

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