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FUNDUS CHANGES IN PREGNANCY INDUCED HYPERTENSION

Ophthalmology

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ABSTRACT

Aim: To determine the prevalence of retinal changes in patients with pregnancy induced hypertension (PIH) and to correlate the retinal changes with severity of PIH.

Methods: A retrospective observational study was conducted over a period of 6 months in a tertiary care hospital from January 2018 to June 2018 with a sample size of 150 PIH patients. Records of all the patients diagnosed with gestational hypertension, preeclampsia and eclampsia were reviewed which included detailed ocular examination with fundus evaluation and the findings were noted.

Results: Out of 150 patients included in the study, fundus changes were seen in 74 (49.3%) patients. 37(24.6%) cases had grade 1 hypertensive retinopathy, 16 (10.6 %) cases had grade 2 hypertensive retinopathy, 6 (4%) had grade 3 hypertensive retinopathy. 4 (2.6%) cases had exudative retinal detachment and 11cases (7.3%) had macular edema.

Conclusion: Regular fundus examination is a very important diagnostic tool for prediction of severity of PIH and thereby improving the maternal and fetal outcome by managing the pregnancy judiciously and providing timely intervention. Therefore, repeated fundus examination at regular intervals has to be done in all PIH patients.

KEYWORDS

Pregnancy induced hypertension, Pre-eclampsia, Eclampsia, Fundus changes in PIH

INTRODUCTION

Hypertensive disorders complicating pregnancy are one of the common and significant causes of maternal morbidity and mortality in developing countries.[1] In developing countries like India, they are responsible for 8-9% of maternal deaths and 15-20% of maternal deaths in western world.[2]

Pregnancy induced hypertension (PIH) is a hypertensive disorder in pregnancy that occurs in the absence of other causes of elevated blood pressure (140/90 mmHg or higher) that occurs after 20 weeks of gestation with previously normal blood pressure.[1, 3] PIH includes gestational hypertension, pre-eclampsia, and eclampsia. Gestational hypertension is characterized by hypertension without proteinuria and edema. Pre-eclampsia is best described as multi-system disorder of unknown etiology characterized by development of hypertension with proteinuria. Pre-eclampsia is divided into two groups as mild and severe. Blood pressure more than 160/110 mm of Hg and proteinuria more than 2 gm/24 hours or > + 2 are included in severe pre-eclampsia. Eclampsia is the occurrence of convulsions or coma unrelated to other cerebral conditions, with signs and symptoms of pre- eclampsia.[4,5]

Retinal vascular changes occur in 40% to 100% of PIH cases. The retinal vascular changes usually correlate with the severity of hypertension and return to normal after delivery.[6] Ophthalmoscopic examination helps in assessing the severity, progression of the disease and ultimate outcome or prognosis of the disease.[7,8]

The present study was undertaken to determine the prevalence of retinal changes in patients with PIH and to correlate the retinal changes with severity of PIH

MATERIALS AND METHODS

A retrospective observational study was conducted over a period of 6 months in a tertiary care hospital from January 2018 to June 2018 with a sample size of 150 patients. Review of records of all the patients diagnosed with gestational hypertension, preeclampsia and eclampsia admitted in the obstetrics ward, labor room and intensive care unit referred to the Ophthalmologist were included.

Records of baseline data, detail history, general physical examination and systemic examination were noted. Records of ocular evaluation were then reviewed and noted. These included visual acuity (VA), anterior segment examination and fundus evaluation under mydriasis (plain tropicamide) were noted.

The retinal changes (hypertensive retinopathy) were graded according to Keith Wagener classification into: Grade I- mild generalized arterial attenuation; Grade II-more severe grade I+ focal arteriolar attenuation; Grade III-grade II+ haemorrhages, hard exudates, cotton wool spots; Grade IV-grade III+optic disc swelling (papilloedema).

RESULTS

Out of 150 patients included in the study, 22 patients (15%) had gestational hypertension, 43 (29%) had mild pre-eclampsia , 47 (31 %) had severe pre-eclampsia and 38 (25 %) cases had eclampsia .(Figure 1) Most of them were between the age group of 19-37 years.

Fundus changes were seen in 74 patients, out of 150 patients. 37(24.6%) cases had grade 1 hypertensive retinopathy, 16 (10.6 %) cases had grade 2 hypertensive retinopathy ,6 (4%) had grade 3 hypertensive retinopathy and no patient presented with grade 4 retinopathy. 4 (2.6%) cases had exudative retinal detachment and 11cases (7.3%) had macular edema.(Table 1)

Amongst 150 patients of PIH, 59 patients (39.33%) had hypertensive retinopathy and 15 patients (10 %) had other retinal changes like macular edema and exudative retinal detachment. (Table 2)

Figure 1: Patient distribution according to diagnosis

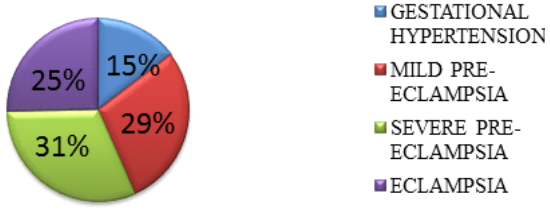

Table 1: Hypertensive retinopathy in PIH

Grades of retinopathy	Number of patients with Fundus changes	Percentage (%)
Grade 1	37	24.6
Grade 2	16	10.6
Grade 3	6	4
Grade 4	0	0
Exudative RD	4	2.6
Macular edema	11	7.3

Table 2: Correlation of retinopathy with the severity of PIH

	Grade 1	Grade 2	Grade 3	Grade 4
Gestational Hypertension	6	0	0	0
Mild Pre-eclampsia	11	0	0	0
Severe Pre-eclampsia	9	6	3	0
Eclampsia	11	10	3	0

DISCUSSION

Pregnancy Induced Hypertension (PIH) is a challenging stigma in the field of obstetrics and one of the major contributors to maternal and perinatal mortality.[9]

Factors that are associated with an increased risk of preeclampsia include nulliparity, multiple gestation, extremes of age, family history of preeclampsia–eclampsia, obesity, diabetes mellitus, chronic hypertension, chronic renal disease, hydatidiform mole, and fetal hydrops.[3,10] The etiology of preeclampsia remains unknown; theories include alterations in the immune response, genetic predisposition, increased free radical formation, endothelial cell dysfunction, incomplete invasion by the trophoblast, increased pressor responses, or inflammatory factors.[1,3]

In the present study, 39.33% of patients had hypertensive retinopathy changes. In Aijaz et al study, 48.47% of PIH patients presented with hypertensive retinopathy changes.[11] In another study done by Varija et al, out of the total 423 patients of PIH examined, the retinal changes were noted in 181 (42.7%) patients.[12]

According to Duke Elder the most common retinal change is attenuation of retinal arterioles, occurring in approximately 60% of patients with pre-eclampsia. In our study, 37(24.6%) cases showed arteriolar attenuation. In bhandari et al study, fortyfour cases (44%) showed arteriolar attenuation. Arteriolar attenuation was seen in 7 cases (21.88%) of mild pre-eclampsia, 26 cases (52%) of severe pre-eclampsia, and 11 cases (61.11%) of eclampsia group.[13] In a study done by Ranjan et al, the most common retinal changes noted were narrowing of arterioles (45%, 183 out of 400 cases). He found that retinal changes were significantly more in patients with severe hypertension.[14]

In our study significant correlation was observed between the development of retinopathy changes and the severity of PIH where in as the severity of the PIH increased the odds of women developing retinopathy also increased substantially. Similar association between the severity of PIH and retinopathy changes were noted in other studies.[8,12,15]

In the present study, macular edema was observed in 11 patients (7.3%). In Bakhda et al study, 3 cases had macular edema and was not related to severity of hypertension.[8]

Exudative retinal detachment was seen in 4 cases (2.6%) in our study where one patient had eclampsia and other 3 patients had severe pre-eclampsia. Termination of pregnancy was advised and retinal detachment regressed post partum. In Bakhda et al study, 3 cases of exudative retinal detachment was found.[8] In Aijaz et al study, serous retinal detachment was noticed in 3.57% patients.[11] Shah et al study, no retinal detachment or macular edema was observed.[16]

Presence of macular edema or papilloedema or retinal detachment are the warning signs for termination of pregnancy.[15]

Fundus examination in PIH patients is important to predict any adverse fetal outcome. It is believed that the presence of retinal changes like haemorrhages may indicate similar changes in the placenta. Since the well being of the foetus depends on the placental circulation, ophthalmoscopic examination of mother's fundus may give a clue to similar micro-circulation changes in the placenta and indirectly to the foetal wellbeing.[12,15]

CONCLUSION

Regular fundus examination is a very important diagnostic tool for prediction of severity of PIH and thereby improving the maternal and fetal outcome by managing the pregnancy judiciously and providing timely intervention. Therefore, repeated fundus examination at regular intervals has to be done in all PIH patients.

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