Case Report

RETINOPATHY AND CHOROIDOPATHY IN HYPERTENSIVE DISORDERS OF PREGNANCY: A CASE SERIES

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ABSTRACT

Preeclampsia-eclampsia is an alarming situation in pregnancy that can lead to serious morbidity and even mortality. Abnormal placentation leads to systemic endothelial dysfunction, compromising the retinal and choroidal vasculature. We report two cases referred by the obstetrics team. Both complained of blurring of vision resulting from different types of hypertensive disorders of pregnancy. One patient with preeclampsia complicated by partial HELLP (hemolysis, elevated liver enzyme, low platelet) syndrome had bilateral chorioretinopathy changes. Another eclamptic patient had bilateral choroidopathy without retinopathy. Concurrent retinopathy in hypertensive choroidopathy tends to have unfavorable but rev ersible visual sequelae. Multidisciplinary approach is advocated in establishing the diagnosis and monitoring the visual recovery.

INTRODUCTION

Acute hypertensive attack in preeclampsia-eclampsia may lead to chorioretinopathy. Chorioretinopathy is more commonly seen in young adults and is postulated to be due to elasticity of the blood vessels. Pathological processes behind the clinical manifestations in hypertensive disorders in pregnancy are choroidal and retinal ischemia from abnormal placentation. Even the visual impairment is usually temporary, the quality of life of patients can be affected, especially in the postpartum period, whereby additional care needs to be given to the newborn.

CASE 1

A 28-year-old, Para 1, day two post spontaneous vaginal delivery at 38 weeks gestation, was referred to the ophthalmology team for bilateral blurring of vision. Her systolic blood pressure was high (190/60 mmHg) by repeated measurements with proteinuria. Blood investigations revealed normal hemoglobin and bilirubin level, low platelet count (100 g/dL) with deranged liver enzyme (aspartate transaminase: 45 U/L). The albumin level was low (22 g/L).

On ocular examination, right best corrected visual acuity(BCVA)vision was 6/18, and the left BCVA was 1/60. There was no relative afferent pupillary defect. Anterior segment examination was unremarkable for both eyes. Bilateral fundus examination showed arteriolar narrowing, multiple cotton wool spots seen in the posterior pole and peripapillary area with flame - shaped hemorrhages. There was bilateral serous retinal detachment seen inferiorly, more extensive in the left eye, involving the macula. There were patches of deep yellowish lesion seen at the temporal retina (Figure 1).

Optical coherence tomography(OCT) showed subretinal fluid involving the papillomacular bundle and temporal area with intact IS/OS junction. There was thickening and disorganization of neurosensory layer, splitting of the outer retinal layer and retention of the inner and outer segment (IS/OS) junction with subretinal fluid and pigment epithelial detachment over the foveal region of the left eye (Figure 2).

She was started on intravenous magnesium sulfate, human albumin infusion and anti-hypertensive medication. Her blood pressure normalized. One month later, BCVA was right was 6/6 and 6/12 in the right and left eye respectively. Bilateral serous retinal detachments completely resolved with pigment epithelial detachment over the left eye.

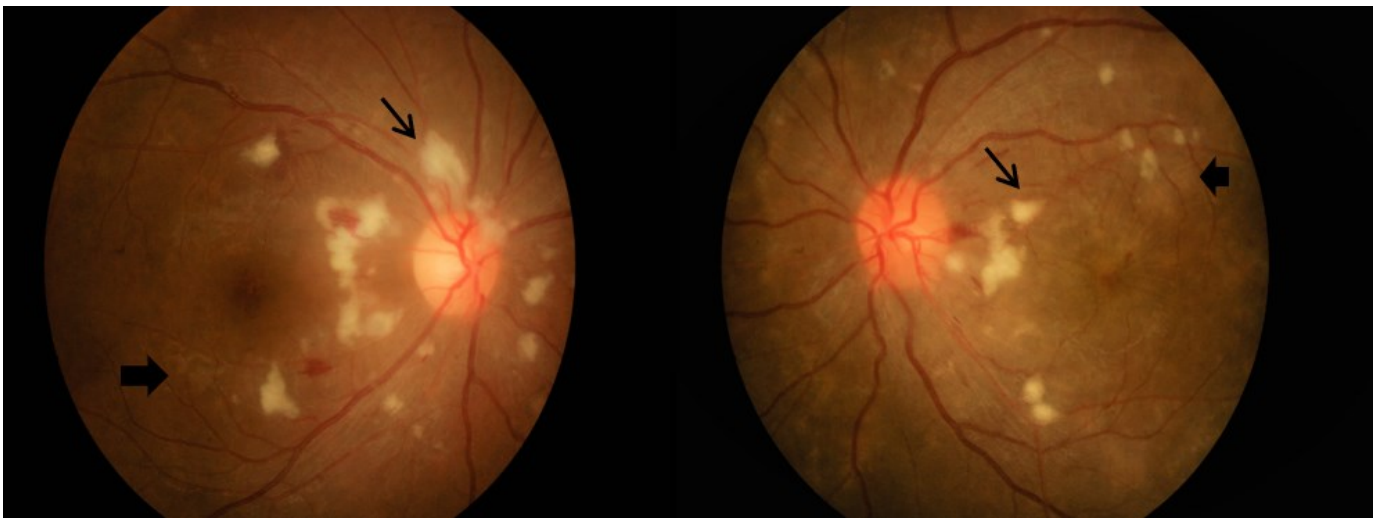

Figure 1: Multiple cotton wool spots (arrow), patches of deep yellowish lesion (block arrow) seen at temporal region.

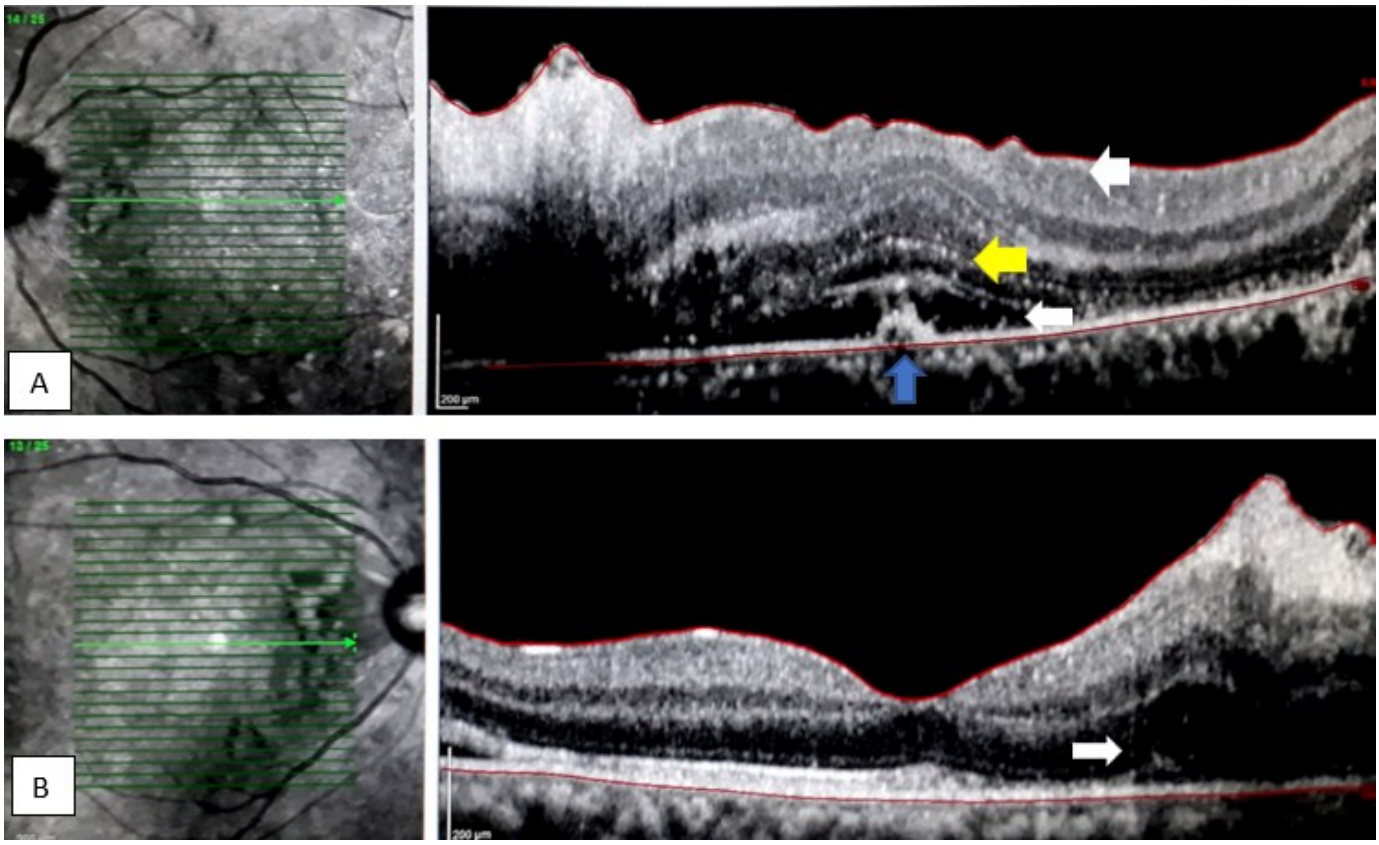

Figure 2: Optical coherence tomography of both eyes:
A. Subretinal fluid (white arrow), thickening and disorganization of neurosensory layer (yellow arrow), pigment epithelial detachment (blue arrow) in the left eye.
B. Minimal subretinal fluid (white arrow) in the right eye.

CASE 2

A 35-year-old, Para 4+2, day three post-emergency lower segment cesarean section for eclampsia complained of left blurring of vision since delivery. Blood pressure upon presentation was 196/119 mmHg, with proteinuria. Blood investigations were within normal limit. She was started on two types of antihypertensive medication by the obstetric team. Her blood pressure was under control. On examination, right BCVA was 6/9, and left was 6/12. There was no relative afferent pupillary

defect. The anterior segment examination of both eyes was unremarkable. Fundus examination showed bilateral serous retinal detachments involving the macula. There were deep yellowish patches at the peripapillary region seen in both eyes. No hypertensive retinopathy changes were seen (Figure 3).

Bilateral OCT of the macula showed subretinal fluid involving the macula, which was more severe in the left eye. The IS/OS junction were intact bilaterally. No pigment epithelial detachment was seen (Figure 4). One month later, the BCVA was 6/6 in both eyes. The serous retinal detachment completely resolved, as evidenced by a repeated OCT.

DISCUSSION

Hypertensive disorders in pregnancy are significant causes of morbidity, long-term dysfunction and mortality during pregnancy and postpartum period. Preeclampsia affects two to eight percent of pregnancies worldwide [1]. Preeclampsia-eclampsia is a disorder that develops during pregnancy which is postulated to be due to abnormal placentation. HELLP syndrome is an obstetric disorder that is characterized by hemolysis, elevated liver enzymes and low platelets. It is considered to be a severe form of preeclampsia [2]. The abnormal placentation leads to oxidative stress and angiogenic imbalance in the

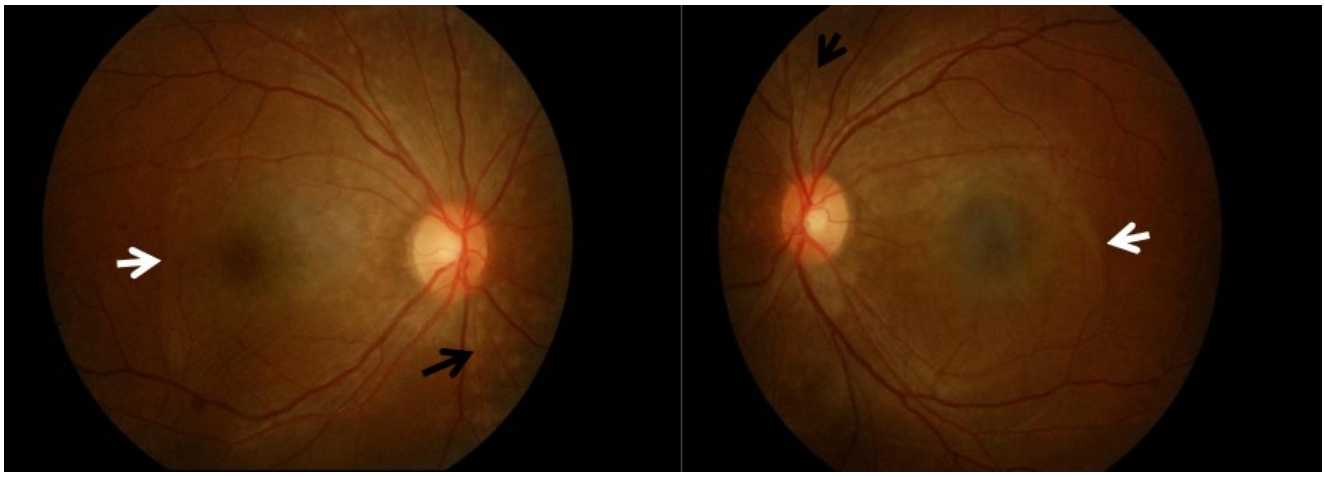

Figure 3: Edge of serous retinal detachments (white arrow), deep yellowish patches (black arrow).

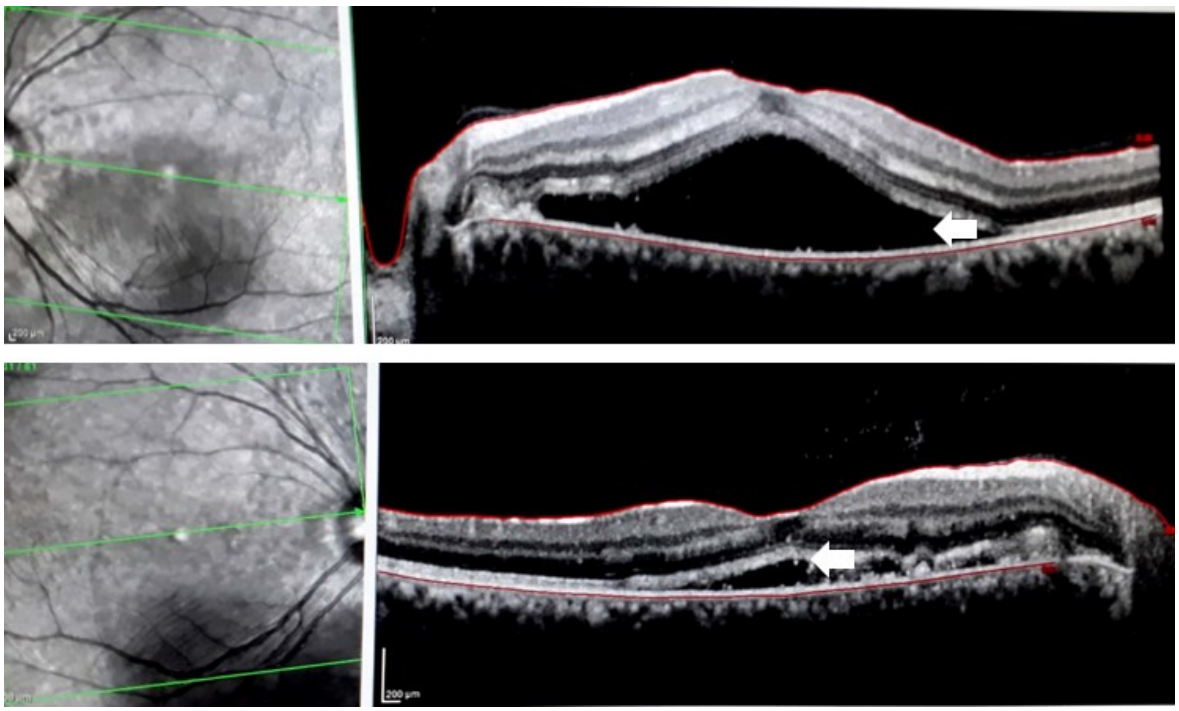

Figure 4: Bilateral subretinal fluid (white arrow)

maternal circulation [3]. There will be an excessive release of anti-angiogenic factors. As a result, there will be endothelial dysfunction and end-organ damage. Ocular involvement is seen in 25 to 50% of patients with preeclampsia-eclampsia, in which the most common finding is narrowing of the retinal vessels [4]. Serous retinal detachment is an uncommon but known cause of vision impairment in preeclampsia-eclampsia [5]. It is seen during antepartum or postpartum period. It is observed in less than one percent of patients with preeclampsia and approximately 10% of those with eclampsia [4]. Concurrent HELLP syndrome in preeclampsia-eclampsia carries approximately seven times higher risk of developing serous retinal detachment than patients without HELLP syndrome [6].

Choriocapillaris are more vulnerable to acute hypertensive attack than retinal vessels due to their anatomical arrangement and the lack of autoregulatory mechanism [7]. They have more direct blood flow from choroidal arteries to choroidal capillaries as they run at right angle between each other. In addition, choriocapillaris are regulated by sympathetic innervation, while retinal circulation has an autoregulatory mechanism to avoid damage in a hypertensive attack. These mechanisms suggest that retinopathy changes are more likely to be manifested in the higher blood pressure range in comparison to choroidopathy [8]. In both of our cases, the presenting blood pressure range was about the same. In the first case, the patient had concurrent partial HELLP syndrome which may contribute to the development of retinopathy which is manifested by arteriolar narrowing, cotton wool spots and retinal hemorrhages. In addition, concurrent retinopathy in hypertensive choroidopathy tends to have unfavorable but reversible visual sequelae [8]. This is shown in the first case as the presenting vision for the left eye was poor due to the presence of intraretinal edema, evidenced by thickening and disorganization of neurosensory layer by OCT.

Systemic endothelial dysfunction will initially affect the choroidal vasculature in which there will be fibrinoid necrosis of choroidal arterioles causing impairment of perfusion in the choriocapillaris, resulting in focal necrosis of retinal pigment epithelium [9]. Generalized choroidal ischemia will interrupt the pumping capability of retinal pigment epithelium leading to serous retinal detachment and pigment epithelial detachment that is frequently symmetrical. Apart from that, additional mechanisms such as hypoalbuminemia and microangiopathic hemolysis also contribute to the formation of serous detachment as demonstrated in the first case. Serous retinal detachment usually resolved within a few weeks after delivery with normalization of blood pressure and good visual recovery. In compromised choriocapillaris, overlying retinal pigment epithelial ischemia will lead to the formation of Elschnig spots. Residual macular retinal pigment epithelial changes due to infarction of choriocapillaris may affect the visual outcome [10]. In the first case, repeated OCT one month after delivery showed retinal pigment epithelial detachment causing mild visual disturbance to the left eye.

CONCLUSION

Hypertensive chorioretinopathy is a rare but known complication of preeclampsia-eclampsia, which can result in significant visual morbidity, however visual prognosis is usually good. Concurrent retinopathy in hypertensive choroidopathy tends to have unfavorable but reversible visual sequelae as demonstrated in the first case. Blood pressure control and reassurance are the mainstays of therapy.

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