

Bilateral Exudative Macula Detachment in a Mother with Pre-Eclampsia:

Case Report and Review of Literature

Md-Said Haslinda¹, Li Min Evelyn-Tai¹, Hussein Adil¹, Nik Lah Nik-Ahmad-Zuky² and Ismail Shatriah^{1*}

¹Department of Ophthalmology, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

²Department of Obstetric and Gynaecology, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

Abstract

Generalised exudative retinal detachment, choroidal infarction and cortical blindness are known visual threatening conditions in patients with pre-eclampsia/eclampsia. Localised macula detachment is an uncommon ocular feature in this emergency obstetric situation. A 33-year-old woman presented with features of severe pre-eclampsia at 26 weeks of gestation. She underwent an emergency lower segment cesarian section at 27 weeks with blood pressure of 180/100 during the crisis. She complained of visual loss three days after delivery. Ocular examination revealed visual acuity of 5/60 OD and 6/60 OS, and exudative detachment of macula in both eyes. The ocular findings resolved completely at three weeks post crisis, while blood pressure gradually reached normotensive level at six weeks after delivery. Acute severe rise of blood pressure in pregnant women with pre-eclampsia/eclampsia causes terminal arterial vasospasm. It leads to breakdown of blood retinal barrier and exudation of fluid into sub-retinal space. Aim of management is prioritized at stabilizing blood pressure without morbidity or mortality to both mother and fetus. We provide a literature review of similar cases from 2011 to 2017 with emphasize on blood pressure level during the crisis, sites of detachment and final visual acuity. Aggressive management of pre-eclampsia/eclampsia patients is essential. Majority had satisfactory final visual outcome. Level of blood pressure may not be related to sites of retinal detachment. A large prospective cohort is needed to evaluate this association objectively.

Keywords: Exudative Macula Detachment; Pre-Eclampsia/Eclampsia; Pregnancy

***Corresponding Author:** Shatriah Ismail, Department of Ophthalmology, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia; E-mail: shatriah@usm.my

Introduction

Generalised exudative retinal detachment is known to cause visual loss in pre-eclampsia patients. It occurs in 1-2% of these patients with a higher incidence in primigravidas [1]. Other visual threatening conditions in pre-eclampsia include hypertensive retinopathy with choroidal infarction and cortical blindness [1].

Localised exudative macula detachment is uncommon in pre-eclampsia patients. We report a case of bilateral exudative macula detachment at day three post-delivery in a multigravida pre-eclamptic patient. A six-year review of published case reports describing generalised/localised exudative macula detachment following pre-eclampsia/eclampsia was also performed, with emphasis on level of blood pressure during crisis, area of detachment and final visual acuity.

Case Report

A 33-year-old woman, para three, with multinodular goitre and severe pre-eclampsia was referred to ophthalmology service on day three post emergency lower segment cesarean section. She complained of sudden onset painless blurring of vision in both eyes since the day before, which worsened over the past 24 hours. The reduced vision was described as a central scotoma, more severe in the right eye than the left. There were no associated floaters, flashes of light, or metamorphopsia.

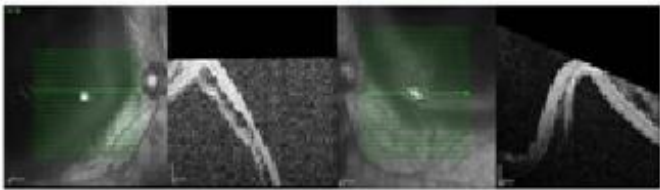
She was diagnosed with severe pre-eclampsia at 26 weeks of gestation, with a blood pressure of 170/100 mmHg and urine albumin of 3+. She was admitted for close monitoring of blood pressure, and was started on tablet methyldopa 250mg 8 hourly. In ward, she developed two episodes of hypertensive crisis with blood pressure of 180-194/106-110. Intravenous magnesium sulphate, labetalol and hydralazine were added to the anti-hypertensive regime. Emergency lower segment cesarean section was performed at 27 weeks of gestation when her blood pressure soared to 180/100 mmHg, with derangement of liver enzymes and uric acid.

Ocular examination revealed a visual acuity of 4/60 in the right eye and 5/60 in the left eye. The visual acuity in both eyes deteriorated to counting fingers on the next day. Relative afferent pupillary defect was absent. Anterior segment examination was unremarkable, with normal intraocular pressure. Fundus examination revealed bilateral exudative macula detachment. There were no retinal haemorrhages, tortuous vessels, cotton wool spot or optic disc swelling observed (Figure 1A). Optical Coherence Tomography (OCT) revealed bilateral isolated macula detachment (Figure 2A). On systemic examination, the patient was comfortable, with a blood pressure of 160/90 mmHg. Deep tendon reflexes were normal. She was clinically euthyroid.

Figure 1A: Fundus photograph at presentation showing bilateral exudative macula detachment, more severe in the left eye



Figure 2A: Optical coherence tomography of the macula showing bilateral detachment of the neurosensory retina during presentation



The intravenous drugs were tapered gradually over the next few days. She was discharged home at day seven post-surgery with tablet labetalol 400mg 8 hourly and tablet nifedipine 10mg 8 hourly. Her blood pressure range was 130-140/70-80 mmHg.

She was reviewed again at three weeks post-delivery. Her visual acuity improved to 6/6 in both eyes with complete resolution of macula detachment (Figure 1B). The OCT confirmed the clinical findings (Figure 2B). Her blood pressure was 130/80mmHg, and oral labetalol 200mg 8 hourly was discontinued at six weeks postpartum.

Figure 1B: Resolution of macula detachment bilaterally three weeks later

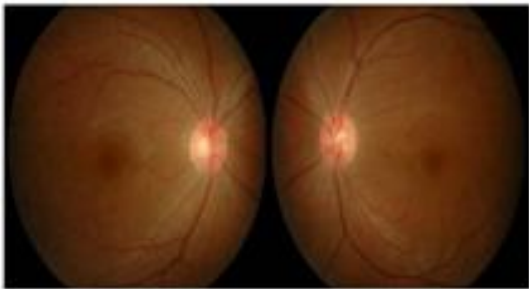
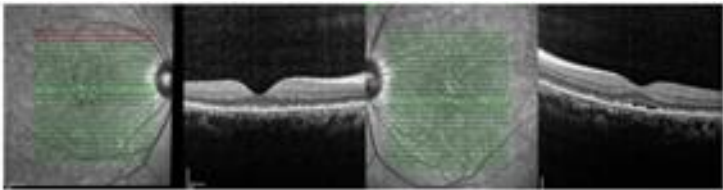


Figure 2B: Complete resolution of subretinal fluid in the right eye, with minimal residual fluid in the left eye, three weeks later



Discussion

Increased blood pressure resulting in terminal arteriolar vasospasm has been described as the main pathogenesis in pre-eclampsia and eclampsia related exudative retinal detachment [2]. It causes choroidal and retinal pigment epithelial ischemia, resulting in breakdown of blood-retinal barrier and exudation of fluid into the sub-retinal space [2]. Localised macula detachment may occur due to a similar pathogenesis. It is also important to differentiate the above retinal signs from central serous chorioretinopathy, which occurs in normotensive patients.

A 20-year review of 28 cases of pre-eclampsia and eclampsia with retinal detachment had been reported by Vigil-De et al., [3]. They observed that the systolic blood pressure associated with pre-eclampsia ranged from 140 to 230 mmHg, while the diastolic reading ranged from 90 to 140 mmHg. Thus, Vigil-De et al.,

postulated that the incidence of retinal detachment does not depend on the severity of pre-eclampsia [3].

Table 1 summarizes our patient and other published case reports since 2011 on retinal detachment secondary to pre-eclampsia, with reference to documented blood pressure during crisis, presenting and final visual acuity [4-18]. Similar to our patient, localised macula detachment in patients with pre-eclampsia has been reported [4-8, 14, 16-18]. Our patient’s documented blood pressure was 180/100 mmHg during the crisis. This is also consistent with previously published cases of exudative macula detachment, which documented blood pressure level ranging from 140-191/90-112 mmHg [4-8, 14, 16, 18]. In contrast, Chenkin et al., reported the only case of isolated exudative macula detachment with an extremely elevated blood pressure level, which soared to 227/155 mmHg [17].

Author	Year	Blood Pressure During Crisis	Site of Detachment	Presenting VA		Final VA	
				OD	OS	OD	OS
Kurdoğlu et al., [1]	2011	5-year-review : 174/110	Retinal detachment	NA	NA	NA	NA
Srećković et al., [4]	2011	180/95	Macula	5/60	3/60	6/6	6/6
Varghese et al., [5]	2012	150/100	Macula	2/60	6/60	NA	NA
Hage et al., [6]	2012	NA	Macula	6/120	6/120	6/6	6/6
		150/95	Left macula	6/6	6/12	6/6	6/7.5
		160/100	Macula	6/6	6/6	6/6	6/6
Chen & Chen [7]	2013	191/112	Macula	6/60	CF	CF	CF
Policiano et al., [8]	2014	170/110	Macula	6/30	6/15	6/7.5	6/7.5
Gogia et al., [9]	2014	140/100	Peripheral retina	PL	PL	6/6	6/18
Tayade & Wattamwar [10]	2014	130/100	Peripheral retina	NA	NA	NA	NA
Pradeep et al., [11]	2014	170/80	Left peripheral retina	6/6	6/6	6/6	6/6
Hafidi et al., [12]	2014	240/115	Peripheral retina	HM	HM	NA	NA
Troumani et al., [13]	2014	NA	Peripheral retina	6/30	6/15	NA	NA
Aoyagi et al., [14]	2015	150/90	Macula	6/60	6/24	6/7.5	6/7.5
Celik et al., [15]	2015	180/100	Generalized retinal detachment	6/30	6/30	6/6	6/6
AlTalbish et al., [16]	2015	NA	Macula	6/60	6/9	6/6	6/6
Chenkin et al., [17]	2016	227/155	Macula	CF	6/60	6/6	6/6
Fujii et al., [18]	2016	159/107	Peripheral retina	6/60	6/60	6/3.8	6/3.8
		147/102	Right macula	6/9.5	6/3.8	6/3.8	6/3.8
Present	2017	180/100	Macula	4/60	5/60	6/6	6/6

The above case reports described central or macula detachment [4-8, 14, 16-18]. Nevertheless, the cases of exudative retinal detachment involving the periphery and sparing the macula area have been reported [9-13, 18]. Hafidi et al., described a peripheral retinal detachment with blood pressure of 240/115 [12], while other authors reported similar areas of detachment with blood pressure levels of 130-159/90-107 mmHg [9-11, 13, 18].

Satisfactory final visual acuity was observed in most cases, including our case. In contrast, Chen and Chen reported a poor final visual acuity due to choroidal ischaemia in a 28-year old nulliparous woman [7]. In her case, this was attributed to a delayed immunochemical reaction to the pre-eclampsia insult, causing release of inflammatory cytokines, with consequent damage to the choroidal endothelium and permanent autoregulatory dysfunction [7].

Conclusion

Isolated exudative macula detachment is rare in patients with pre-eclampsia. The majority had satisfactory final visual outcome. The level of blood pressure elevation during the crisis may not be related to the area or severity of detachment. However, more data is needed to evaluate this association objectively.

References

1. Kurdoğlu Z, Kurdoğlu M, Ay GE, Yaşar T (2011). Retinal findings in case of eclampsia. *Perinatal Journal* 19(2):60-63.
2. Hayreh SS (1996). Systemic arterial blood pressure and the eye. *Eye* 10:5-28.
3. Vigil-De Gracia P, Ortega-Paz L. Retinal detachment in association with pre-eclampsia, eclampsia and HELLP syndrome (2011). *Int J Gynaecol Obstet* 114(3):223-225.
4. Srećković SB, Janićijević-Petrović MA, Stefanović IB, Petrović NT, Sarenac TS, Paunović SS. Bilateral retinal detachment in a case of pre-eclampsia. *Bosn J Basic Med Sci* 11(2):129-131.
5. Varghese S, Koshy, J, Avasthi, K. Bilateral serous retinal detachment in a case of eclampsia (2012). *Health* 4(1):13-14.
6. Hage R, Gouhier J, Jean-Charles A, Donnio A, Merle H (2012). Retinal detachment in preeclampsia: a series of three cases. *J Fr Ophtalmol* 35(10):824 e1-6.
7. Chen KH, Chen LR. Bilateral retinal detachment with subsequent blindness in a pregnant woman with severe pre-eclampsia (2012). *Taiwanese J Obstet Gynecol* 52(1):142-144.
8. Policiano C, Pereira I, Araújo C, Valentim-Lourenco A, Graca LM. Bilateral bullous retinal detachment in a case of preeclampsia (2014). *Gynecol Obstet Res Open J* 1(1):6-7.
9. Gogia V, Sharma S, Deka D, Dadhwal V, Venkatesh P (2014). Bilateral retinal detachment: a clue to diagnosis of HELLP syndrome. *Can J Ophthalmol* 49(1):e5-8.
10. Tayade S, Wattamwar A (2014). Bilateral retinal detachment in pregnancy complicated by preeclampsia, eclampsia and placental abruption. *IJBR* 05(12).
11. Pradeep AV, Rao S, Ramesh Kumar R (2014). Partial HELLP syndrome with unilateral exudative retinal detachment treated conservatively. *Saudi J Ophthalmol* 28(4):329-331.
12. Hafidi Z, Handor H, Oudanane S, Laghmari M, Derrar R, Sabrane I, Regragui A, Abdellaoui G, Daoudi R (2014). Bilateral exudative retinal detachment as presenting sign of preeclampsia. *J Fr Ophtalmol* 37(5):65-66.
13. Troumani Y, Touhami S, Beral L, David T (2014). Preeclampsia and retinal complications. *J Fr Ophtalmol* 37(10): 834-835.
14. Aoyagi R, Hayashi T, Tsuneoka H (2015). Choroidal thickening and macular serous retinal detachment in pregnancy-induced hypertension. *Int Med Case Rep J* 8:291-294.
15. Çelik G, Eser A, Günay M, Yenerel NM (2015). Bilateral vision loss after delivery in two cases: severe preeclampsia and HELLP syndrome. *Turk J Ophthalmol* 45(6):271-273.
16. AlTalbish A, Khateb S, Amer R (2015). Elschmig's spots in the acute and remission stages in preeclampsia: spectral-domain optical coherence tomographic features. *Eur J Ophthalmol* 25(5):e84-87.
17. Chenkin J, Heslop CL, Atlin CR, Romano M, Jelic T (2016). Bilateral retinal detachments caused by severe preeclampsia diagnosed with point-of-care ultrasound. *CJEM* 18(5):395-398.