

## Severe Preeclampsia at 26 weeks Gestation on Nulliparous with Complication of Bilateral Serous Retinal Detachment

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### Abstract

*Preeclampsia is still one of the leading causes of death and severe maternal morbidity.<sup>[1]</sup> The rate of incidences range from 5 to 10 % in all pregnancies.<sup>[2]</sup> Clinical condition in Preeclampsia is increasing blood pressure and proteinuria. Preeclampsia can cause multisystem disorders including visual disruptions.<sup>[3]</sup> The incidence rate of visual system disruptions is 25 % of patients with severe preeclampsia and 50% of patients with eclampsia.<sup>[3]</sup> The most common visual complication is hypertensive retinopathy, serous retinal detachment, and cortical blindness.<sup>[4]</sup> The incidences of serous retinal detachment are approximately 1% in severe preeclampsia and 10% in eclampsia.<sup>[5]</sup> We report a case of 28 years old nulliparous with severe preeclampsia at 26 weeks gestation, who complained blurred vision, we ran several examinations and bilateral serous retinal detachment was diagnosed. Her visual has significant improvement five weeks after pregnancy termination.*

**Key word** : Severe preeclampsia, Bilateral Serous Retinal Detachment, Proteinuria, Nulliparous

## Preeklampsia Berat pada Nulipara di Usia Kehamilan 26 minggu dengan Komplikasi Ablatio Retina Exudatif Bilateral

### Abstrak

Preeklampsia masih menjadi salah satu penyebab utama kematian dan morbiditas maternal.<sup>[1]</sup> Tingkat insiden preeklampsia berkisar dari 5 hingga 10% pada semua kehamilan.<sup>[2]</sup> Kondisi klinis Preeklampsia adalah meningkatnya tekanan darah dan proteinuria. Preeklampsia dapat menyebabkan gangguan multisistem termasuk gangguan penglihatan.<sup>[3]</sup> Tingkat kejadian gangguan sistem penglihatan adalah 25% pada pasien dengan preeklampsia berat dan 50% pada pasien dengan eklampsia.<sup>[3]</sup> Komplikasi visual yang paling umum terjadi adalah retinopati hipertensi, *serous retinal detachment*, dan kebutaan kortikal.<sup>[4]</sup> Insidensi *serous retinal detachment* sekitar 1% pada preeklampsia berat dan 10% pada eklampsia.<sup>[5]</sup> Kami melaporkan kasus nulipara berusia 28 tahun dengan preeklampsia berat pada usia kehamilan 26 minggu, yang mengeluhkan penglihatan kabur, dilakukan beberapa pemeriksaan dan *bilateral serous retinal detachment* ditegakkan. Penglihatan pasien mengalami perbaikan yang signifikan minggu ke-lima setelah terminasi kehamilan.

**Kata kunci**: Preeklampsia berat, Ablasi Retina Serosa Bilateral, Proteinuria, Nullipara

## Introduction

Preeclampsia is a form of pathological change in pregnancy. The various of pathological changes depended on the affected organ, including visual disruptions. The incidence rate of visual system disruptions is 25% of patients with severe preeclampsia and 50% of patients with eclampsia.<sup>3</sup>

Preeclampsia causes visual disruptions by the vasoconstriction of retinal arterioles.<sup>4</sup> Serous retinal detachment is one of the example of complications that occurs in visual system. We here in report a case of bilateral serous retinal detachments before delivery in a 28 years old woman who developed severe preeclampsia during her first pregnancy at 26 weeks gestation. The occurrence of this case 1% in severe preeclampsia and 10% in eclampsia.<sup>5</sup>

## Objective

To present a rare case of complication that occur in severe preeclampsia and to discuss a case basis theory and literature.

## Case Illustration

A 28-years old woman, nulliparous at 26 weeks gestation, was referred to the emergency department with complaints of headaches, blurred vision, seeing behind curtains and swelling at pretibial, face and both eyelids. Two weeks before being admitted to the hospital, she developed a blurred vision, but the frequency was rare and the blurred vision disappeared after she rested. Three days before being admitted to the hospital her vision became blurer. She also complained seeing behind curtains in both fields of vision. In addition, she also described having swellings in pretibial, face and both eyelids. Patients did not have any history of hypertension before and in Ante Natal Care control, her blood pressure

was always measured normal. There was no history of trauma to the head and eyes. She also denied any history of refractive abnormalities.

The physical examination showed full conscious awareness, blood pressure (BP) 185/110 mmHg, pulse 90 times per minute, respiratory rate 20 times per minute and temperature 36.6°C.

The ophthalmic examination discovered that, her visual acuity was 1/60 Ocular Dextra et Sinistra (ODS), pupil isocorous Ø 3mm, direct and indirect light reflection (+/+), anterior segment appeared calm, clear-looking lens, intraocular pressure within normal limits, funduscopy examination showed bilateral serous retinal detachment, and ocular ultrasound resulted detachment of the retina due to serous variation.

The laboratory results showed proteinuria (+) 3, platelets 169,000 / mm<sup>3</sup>, albumin 2.6 g / dl, SGOT 30 U / L, SGPT 13 U / L, Ureum 40mg / dl, Creatinine 1.37 mg / dl.

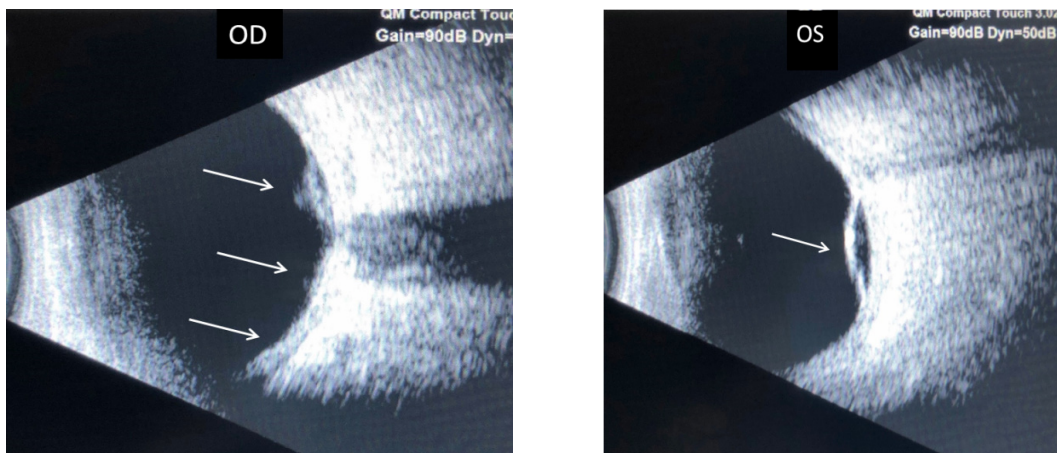
According to the anamnesis, physical examination and laboratory findings, the diagnosis of this patient was G1P0A0H0 gravida 26 weeks with severe preeclampsia and bilateral serous retinal detachment was diagnosed based on the physical examination and investigation. The blood pressure measurement was 185/110 mmHg accompanied by proteinuria (+) 3. In the results of the eye examination there was a decrease in visual acuity in ODS 1/60, funduscopy showed bilateral serous retinal detachment, and ocular ultrasound resulted detachment of the retina due to serous variation.

The patient was immediately administrated magnesium sulphate regimen and oral antihypertensive nifedipine 1 x 30mg. Emergency cesarean section was performed in this patient and a female baby was born, weight 610 gram, with an Apgar score 7 at 1 minute and 8 at 5 minutes. The

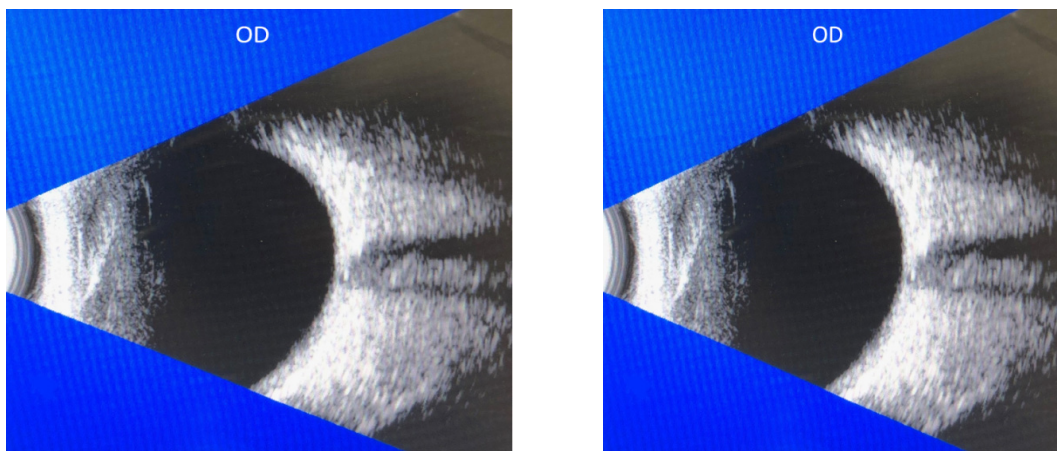
baby was admitted to the neonatal intensive care unit (NICU). One day after the treatment, the baby died due to respiratory failure.

During the first day of postpartum, the patient still complained of blurred vision and seeing behind curtains, her visus was ODS 1/60, blood pressure 146/104mmHg. On the second day of postpartum, her visus was ODS 1/60, blood pressure 125/88 mmHg. On the third day of postpartum, her left sight has improved, visus ocular dextra (OD) was 1/60 ocular sinistra was (OS) 2/60, blood pressure 110/80 mmHG. The patient was discharged on the fourth day of postpartum and was given furosemide 1 x 40 mg tab. On the seventh day of postpartum, the patient reported that she had not seen

behind curtains anymore and her blurred vision had improved. On the outpatient care, day 14 of postpartum, the patient's visual acuity gradually improved. The complaints of blurred vision were reduced. During the eye examination, her visus was ODS 6/15, anterior segment appeared calm, clear-looking lens, intraocular pressure was within normal limits, funduscopy showed bilateral serous retinal detachment has improved, and ocular ultrasound resulted the detachment of the retina almost restored. On the outpatient care, day 18 of postpartum, her visus was OD 6/12 OS 6/9 pinhole (-). The day 38 of postpartum, her blurred vision has gone. Her visus was OD 6/9 OS 6/7.5, funduscopy showed the retina looks intact, ocular



**Figure 1. Ocular Ultrasound resulted retinal detachment in serous variation**



**Figure 2. Ocular Ultrasound resulted complete resolution of retinal detachment bilaterally**

ultrasound resulted complete resolution of retinal detachment bilaterally. Her visus now 6/6 ODS, after correction of her refraction. OD cylindrical lens C -1.25(173<sup>0</sup>) and OS spheris lens - 0.50.

**Discussion**

Preeclampsia still remains one of the leading cause of death and severe maternal morbidity.<sup>1</sup> This complication will affect 5 to 10% of all pregnancies.<sup>2</sup> The clinical presentation of preeclampsia is increasing blood pressure >140/90 mmHg with Proteinuria, but if the proteinuria is negative, every hypertensive woman should be still investigated for multisystem disorder, in order to eliminate the hypothesis of preeclampsia.<sup>1</sup> Preeclampsia can affect many multisystem disorders including cardiovascular changes, hematologic abnormalities, hepatic and renal impairment, cerebral dysfunction, and it also can cause visual disruptions.<sup>3</sup> The etiology of preeclampsia is unknown, but several theories regarding the etiology of preeclampsia are abnormal trophoblastic invasion of uterine vessels, immunological factors, inflammatory changes and genetic factors.<sup>6</sup> The basic pathophysiology of preeclampsia is vasospasm. Vascular vasoconstriction will cause the resistance of blood flow, this will

develope arterial hypertension. The arterial hypertension affects multisystem and various pathological changes will occur on the affected organ.<sup>1</sup>

Preeclampsia usually occurs after 20 weeks of gestation. Preeclampsia is regarded early if it occurs before the completed 34 weeks of gestation and late after this gestational age.<sup>1</sup>

Severe Preeclampsia can evoke complication of eclampsia. Eclampsia is characterized by general seizures and may appear before, during, or after labor. Premonitory symptoms of eclampsia are headaches, visual disturbances or scotoma and epigastric or right upper quadrant pain.<sup>6</sup>

As stated above, Preeclampsia can affect many multisystem disorder including visual disruptions. Visual symptoms include blurred vision, scotoma, diplopia.<sup>7</sup> The most common visual complication are hypertensive retinopathy, serous retinal detachment, and cortical blindness.<sup>4</sup> Serous retinal detachment is a rare case, the incidence rates are approximately 1% in severe preeclampsia and 10% in eclampsia.<sup>3</sup> Serous retinal detachment happens when either retinal blood vessels or the retinal pigmented epithelium (RPE) is damaged, allowing fluid to pass into subretinal space.<sup>8</sup> The retinal detachment is one of the emergency state of ophtamology.

**Table 1 Risk factors for preeclampsia<sup>6</sup>**

Age <20 years or >35 years
Nulliparity
Multiple gestation
Hydatidiform mole
Diabetes mellitus
Thyroid disease
Chronic hypertension
Renal disease
Obesity
Family history of preeclampsia

**Table 2 Diagnostic criteria for Preeclampsia<sup>6</sup>**

Blood pressure	>140/90 mmHg
Proteinuria	>300mg/24h , Protein : creatinine ratio >0.3 , Dipstick 1+ persistent
Trombocytopenia	Platelets <100.000 $\mu$ L
Renal insufficiency	Creatinine >1.1 mg/dL or doubling of baseline
Liver involvement	Serum transaminase levels twice normal
Cerebral symptoms	Headache, visual disruption, convulsions
Pulmonary edema	

It causes the separation of the neurosensory retina from the RPE.<sup>9</sup>

Generally there is a process of exchange of water, salts, nutrients, and metabolites between the retina and the choroid, and which prevents the accumulation of fluid in the subretinal space. This process is facilitated by RPE. This RPE form the blood retinal barrier from its tight junction between the RPE cells. At the time when the blood pressure is increasing like severe preeclampsia, it may cause choroidal ischemia, secondary to intensive arteriolar vasospasm which can result in lesion to the Retinal pigmented epithelium.<sup>5</sup> This ischemic will damage the blood retinal barrier with the result of fluid transudation through choroidal vessels to subretinal space, leading to focal retinal detachment. Subretinal fluid is responding to the force of gravity, and the retina where the accumulation of this fluid will become detached. In this type of retinal detachment there is no presence of a hole, tear or break.<sup>8</sup>

Despite the fact that serous retinal detachment is a rare complication in severe preeclampsia, the prognosis of this visual loss is excellent.<sup>3</sup> Its because spontaneous recovery which occurs within weeks till months due to absorption of fluid by RPE and visual acuity should return to pre-detachment level.<sup>3</sup> That's why there is no necessity for performing surgery for this type of serous

retinal detachment except for Bed rest could be helpful.<sup>10</sup>

Our patient came with complaints of headache, blurred vision and swelling at pretibial, face and both eyelids. The visual symptoms match with the visual dysruption manifestation as stated above. Her blood pressure was measured 185/110mmHg followed by proteinuria (+)3. She denied any history of hypertension and trauma to the head and eyes. Later we performed ophtalmic examination with the result of decreased of visual acuity, her visus was 1/60 ODS, funduscopy showed bilateral serous retinal detachment, ocular ultrasound resulted detachment of the retina due to serous variation. We diagnosed her with G1P0A0H0 gravida 26 weeks with severe preeclampsia and bilateral serous retinal detachment. As explained above, nulliparity is one of the risk factors for preeclampsia and this is her first pregnancy. Other than that, regarding the onset of manifestation, her preeclampsia is regarded early because it occurs before the completed 34 weeks.

As we can see from the table above, the incidence of bilateral serous retinal detachment associated preeclampsia is more frequent in Nulliparous women and it is all found in the third trimester of pregnancy. The blurred vision can happen between antepartum or postpartum. The visual dysruption is reversible and the visual acuity

**Table 3 Review of case reports of the serous retinal detachment association Preeclampsia**<sup>[9,11,10,12,3,7,13,14,15,5,16,17]</sup>

Author	Year	Age	Gravida	Gestation week	Time of occurrence the blurred vision	Duration of recovery
Sreckovic et al	2011	24 y.o	Primigravida	Term	Postpartum	1 month
Altinbas et al	2012	28 y.o	Multigravida	38 weeks	Postpartum	2 weeks
Policiano et al	2014	30 y.o	Primigravida	36 weeks	Postpartum	2 weeks
Bhandari et al	2014	23 y.o	Multigravida	32 weeks	Antepartum	1 month
Tayade et al	2014	27 y.o	Multigravida	31 weeks	Postpartum	2 weeks
Abunajma et al	2016	19 y.o	Primigravida	35 weeks	Postpartum	6 weeks
Fujii et al	2016	28 y.o	Primigravida	38 weeks	Antepartum	5 months
Fujii et al	2016	26 y.o	Primigravida	34 weeks	Postpartum	3 months
Chakraborti et al	2016	23 y.o	Primigravida	Term	Antepartum	6 months
Kjaev et al	2017	unknown	Primigravida	31 weeks	Antepartum	1 month
Abdellaoui et al	2017	36 y.o	Primigravida	34 weeks	Antepartum	2 weeks
Haslinda et al	2017	33 y.o	Multigravida	26 weeks	Postpartum	3 weeks
Ferhi et al	2018	24 y.o	Primigravida	35 weeks	Antepartum	3 weeks

can be recovered within weeks till months.

Reflect to our case, the patient was primigravida, her blurred vision occurred at 26 weeks gestation and it happened antepartum. Her blurred vision has recovered spontaneously without any surgical intervention and her visual acuity recovery were 5 weeks. From the table above, the fastest recovery is in 2 weeks and the latest is in 5 months. Like all the case presented above, there were no specific treatment for the patients and all the patients recovered

spontaneously. The only factor related to the occurrence of retinal detachment in this patient was severe preeclampsia through the damaged of retinal blood vessels or the retinal pigmented epithelium. We didn't find any history of trauma to the eyes and she denied any history of visual system disturbance before the pregnancy. Her final ophthalmic examination, the visus was ODS 6/6, funduscopy showed the retina was intact, and ocular ultrasound showed complete resolution of bilateral retinal detachment.

## Conclusions

Serous retinal detachment is a rare complication of preeclampsia. Although this is a rare case, this diagnosis should be still kept in mind, if a patient with preeclampsia or eclampsia comes with blurred vision especially with characteristic of seeing behind curtains. The prognosis of visual acuity was good in most cases. A multidisciplinary approach especially between obstetricians and ophthalmologist is recommended towards a better prognosis.

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## References

1. Mayrink J, Costa ML, Cecatti JG. Preeclampsia in 2018 : Revisiting Concepts, Physiopathology, and Prediction. *Hindawi The Scientific World Journal*, 2018; 1–9.
2. Ghavidel LA, Mousavi F, Bagheri M, Asghari . Preeclampsia Induced Ocular Change. *International Journal of Women's Health and Reproduction Sciences*, 2018; 6(2): 123–126.
3. Tayade S, Wattamwar A. Bilateral Retinal Detachment in pregnancy complicated by Preeclampsia, Eclampsia and Placental Abruptioin. *International Journal of Biomedical Research*, 2014; 5(12): 780–782.
4. Kurdoglu Z, Kurdoglu M , Gulcin EA, Yasar T. Retinal Findings in Cases of Preeclampsia. *Perinatal Journal*, 2011; 19(2): 60–63.
5. Abdellaoui T, Bouayad G, Elkhoyaali A. Bilateral Serous Retinal Detachment complicating Preeclampsia. *Indian Journal of Medical Specialities*, 2018; 36–39.
6. Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS , Hoffman BL, et al. *Williams obstetrics*. 24th ed. New York: McGraw-Hill Education; 2014 : p.728–79.
7. Abunajma M, Abdulla SH, Alkhalifa F. Bilateral Exudative Retinal Detachment in Pre-Eclampsia. *Bahrain Medical Bulletin*, 2016; 38(1): 46–47.
8. *Retina and Vitreous. Basic and Clinical Science Course*, 2016–2017. San Fransisco: American Academy of Ophthalmology; 2016. p.292–302.
9. Sreckovic SB, Sarenac TS, Paunovic SS. Bilateral Retinal Detachment in a case of Preeclampsia. *Bosnian Journal of Basic Medical Sciences*, 2011; 11(2): 129-131.
10. Policiano C, Pereira I, Araujo C, et al. Bilateral bullous retinal detachment in a case of preeclampsia. *Gynecology and Obstetrics Research Open Journal*, 2014; 1(1): 6–7.
11. Altinbas SK, Cenksoy P, Tapisiz OL, et al. Bilateral Serous Retinal Detachment and Uterine Artery in Association with Preeclampsia. *Department of Obstetrics and Gynecology Etlik Zubeyde Hanim Women's Health Teaching & Research Hospital*, 2011 : 97–98.
12. Bhandari AJ, Bangal SV, Padghan DD, Gogri PY. Bilateral Serous Retinal Detachment as a Complication of Hemolysis, Elevated Liver Enzymes and Low Platelets Syndrome. *Nigerian Journal of Ophtalmology*, 2014; 22(2): 87–89.
13. Fujii A, Mogami H, Kondoh E, et al. Two cases of Serous Retinal Detachment with Placental Abruptioin. *Hypertension Research in Pregnancy*, 2016; 4: 33–37.
14. Chakraborti C, Barua N, Malsawmtluanga M. A rare case of Bilateral Total Retinal Detachment in Preeclampsic Primigravida patient. *Sudanese Journal*

- of Ophthalmology, 2016; 8(2): 62–64.
15. Kjaev I, Nivicka JK , Kjaeva S, et al. Bilateral serous retinal detachment in preeclampsia : Case report. *Mac Med Review*, 2017; 71(2): 143–145.
  16. Haslinda MS, Li MET, Adil H, et al. Bilateral Exudative Macula Detachment in a Mother with Preeclampsia : Case Report and Review of Literature. *Aperito Journal of Ophthalmology*, 2017; 3(1): 1–4.
  17. Ferhi F, Khlifi A, Hachani F, Tarmiz K, Benjazia K. Ultrasound assessment of visual loss during severe preeclampsia: a case report. *Critical Ultrasound Journal*, 2018; 10(6): 1–4.