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Case Report

Bilateral serous retinal detachment in pre-eclampsia a rare but favorable complication: case report

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Abstract

Pre-eclampsia is a serious pregnancy-related condition that can cause damage to multiple organs, including the eyes. While pre-eclampsia is commonly associated with the narrowing of the retinal arteries, more severe complications such as cortical blindness, optic neuropathy, and serous retinal detachment (SRD) can occur in rare cases. This case report describes a 26-year-old primiparous woman who presented with headaches, bilateral visual fog, and tinnitus and was diagnosed with pre-eclampsia based on elevated blood pressure and proteinuria. Despite receiving antihypertensive treatment, the patient's visual symptoms worsened, prompting an emergency cesarean section. An ophthalmological examination revealed bilateral macular SRD. SRD in pre-eclampsia is a rare complication that can occur even in the immediate post-partum period, with a favorable prognosis. It should be noted that any pre-eclamptic patient presenting with visual symptoms in the third trimester or post-partum should be considered for serous retinal detachment.

INTRODUCTION

Pre-eclampsia, a potentially serious condition, manifests in the later stages of pregnancy. It is characterized by elevated blood pressure and proteinuria in pregnant women beyond the 20th week of gestation. The most prevalent complications associated with pre-eclampsia include HELLP syndrome and eclampsia. HELLP syndrome involves hemolytic anemia, liver dysfunction, and low platelet count, which can progress to eclampsia—an emergency condition marked by seizures and coma. The most frequent ophthalmologic manifestation of pre-eclampsia is the reduction of the caliber of the retinal arteries, which increases in frequency with the severity of the disease. This manifestation is often asymptomatic and resolves without sequelae after delivery and does not require systematic screening. Other more severe ophthalmologic manifestations, such as cortical blindness, optic neuropathy, and SRD, are rare and exceptional [1].

In this report, we present a case of a patient who developed SRD during severe pre-eclampsia, which fortunately had a favorable outcome in the postpartum period.

CASE REPORT

This is a 26-year-old patient, primigravida, O+ blood group, with no notable medical history, at 39 weeks of gestation, who presented to the emergency department with headaches, bilateral visual fog, and tinnitus. The pregnancy had been monitored since the first trimester with a correct prenatal assessment. On admission, clinical examination revealed a blood pressure of 185/105 mmHg, positive labstix 3+ proteinuria, edema in the lower limbs up to the knee with a recent weight gain of 10 kg, normal osteotendinous reflexes, and no neurosensory signs. The patient was hospitalized with rest and blood pressure monitoring, and a blood test was performed. The antihypertensive treatment started using an auto-pulsed syringe, delivering a nicardipine dosage of 4 mg/h. A loading dose of magnesium sulfate, totaling 4 g administered over 20 minutes, was also given. Subsequently, a maintenance dose of 1 g/h for a period of 24 h. An hour later, the patient reported a sudden decrease in bilateral visual acuity and a blood pressure of 196/120 mmHg, prompting an emergency cesarean section. The cesarean section allowed for the extraction of a female newborn with an Apgar score of 10/10 and a birth weight of 3 kg. Biochemically, HELLP syndrome was diagnosed (haemoglobin =10 g/dl^{-1}, platelets =85 000 plt/μl, TP = 95%, LDH = 880UI/l).

The patient's blood pressure improved significantly under nicardipine treatment in the postpartum period. An ophthalmological examination revealed a visual acuity of 1/10 in both eyes without correction, normal anterior segments, preserved photomotor reflexes, and an ocular pressure of 8 mmHg. After pupillary dilation, a fundus examination revealed bilateral

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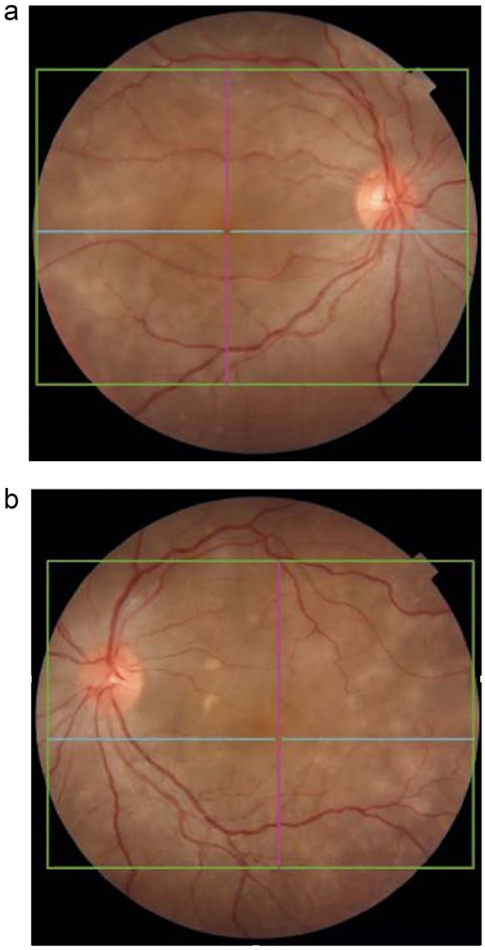

Figure 1. (**a**) Image showing serous retinal detachment of the right eye. (**b**) Image showing serous retinal detachment of the left eye.

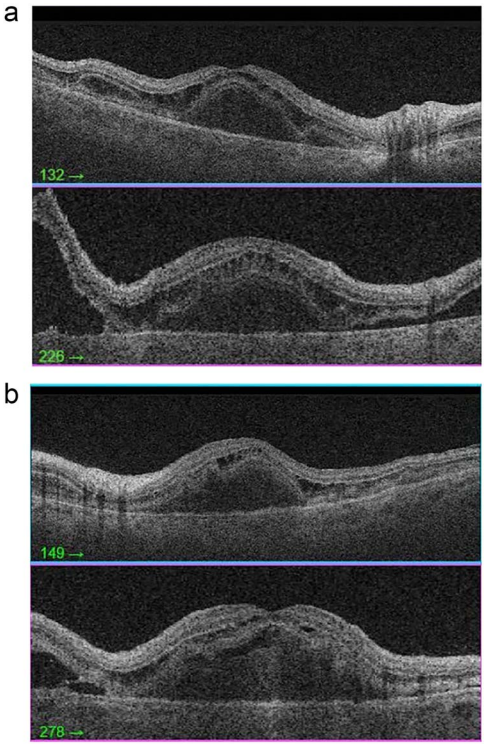

Figure 2. (**a**) Optical coherence tomography of the right eye on initial examination showing the SRD that affects the integrity of the various retinal layers. (**b**) Optical coherence tomography of the left eye on initial examination showing the SRD that affects the integrity of the various retinal layers.

macular serous retinal detachment (Fig. 1a and b) and ocular ultrasound showed choroidal detachment on the right.

Optical coherence tomography (OCT) confirmed bilateral macular serous retinal detachment (Fig. 2a and b). In terms of managing SRD, the chosen approach involved opting for a conservative strategy with vigilant ophthalmological surveillance, rather than initiating treatment. Five days later, the detachments had significantly decreased, and the visual acuity in the right eye had improved to 3/10 and to 4/10 in the left eye. Fifteen days after delivery, the visual acuity in the right eye improved to 6/10 and in the left eye to 8/10. One month later, the patient had recovered a visual acuity of 10/10 in both eyes without correction, and fundus examination with OCT showed no abnormalities (Fig. 3a and b).

DISCUSSION

SRD is a rare complication of pre-eclampsia, affecting less than one in 10 000 pre-eclamptic patients [2]. However, this estimate may be underestimated as patients typically do not undergo systematic ophthalmological examination, and SRD can be located outside the macula, making it invisible [1].

The exact pathophysiology of SRD is unknown. However, it is believed to be caused by choroidal ischemia due to arteriolar vasospasm. This vascular insufficiency results in damage to the retinal pigment epithelium, transudation of fluid, and focal

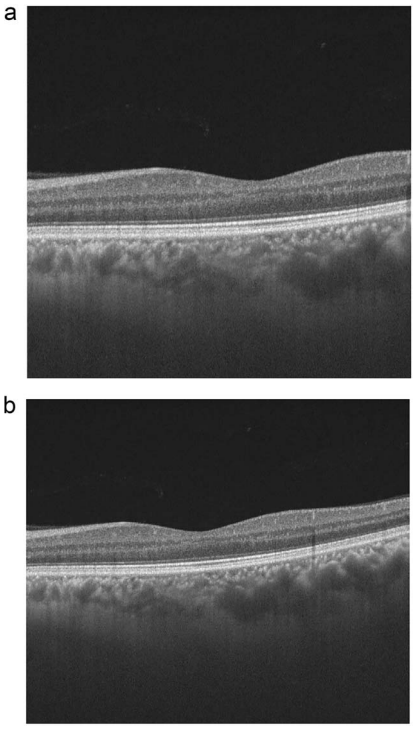

Figure 3. (**a**) Optical coherence tomography of the right eye at follow-up examination showing complete resolution of the SRD. (**b**) Optical coherence tomography of the left eye at follow-up examination showing complete resolution of the SRD.

Table 1. Review of the literature on retinal detachment in preeclampsia

Case reports	R. Hage *et al.* [4]	R. Hage *et al.* [4]	R. Hage *et al.* [4]	Teodoru *et al.* [6]	Sreeram *et al.* [7]	Gupta *et al.* [8]	Gundlach *et al.* [9]	Inan *et al.* [10]	Current case
Age	22 ans	30 ans	33	38	29	33	39	24	26
Primipare	+	+	No data	+	−	No data	−	No data	+
Multiparous	−	−		−	+		+		−
Gestational age (weeks)	27	27	26	35	37	No data	29	28	39
Medical history									
Placental vasculopathy	−	−	−	−	−	−	+(HELLP Sd)	−	−
Others	Ła sickle cell disease	−	rheumatic fever	−	−	−	obese	−	−
Blood pressure (160/100 mmhg)	+	+	+	+	+	+	+	+	+
Proteinuria	+	+	No data	No data	+	No data	+	+	+
Lower limb edema	+	−	−	−	+	−	−	−	+
Ascites	+	−	−	−	+	−	−	−	−
Initial biological tests									
HELLP syndrome	−	−	−	+	−	−	+	+	+
Mode Of Delivery	cesarean section	cesarean section	cesarean section	cesarean section	cesarean section	vaginal delivery	cesarean section	cesarean section	cesarean section
Indication of cesarean section	severe preeclampsia	Trombopenia	Trombopenia	HELLP syndrome	severe preeclampsia	Trombopenia	HELLP syndrome	HELLP syndrome	HELLP syndrome
Mode of onset of visual disorders									
Pre-delivery	+	+	−	−	−	−	+	+	−
After delivery	−	−	+	+	+	+	−	−	+
Bilateral	+	−	−	−	+	+	+	+	+
Brutal	−	+	+	+	+	−	−	−	+
Type of visual disorders	Blurred vision photopsies	decrease in left visual acuity +voile in central vision	reduced visual acuity	reduced visual acuity	reduced visual acuity	decreased vision with central loss of visual field, floaters, and metamor-phopsia	bilateral blurred vision worsening	bilateral visual impairment	bilateral visual fog
Initial visual acuity									
Left eye	1/20e	6/10	10/10	2/10	VA of finger counting at 2-feet distance	corrected VA hand-held Rose- nbaum screener 20/200 + 1	BCVA 20/400	20/50 with −1.00 + 0.50x71	1/10
Right eye	1/20e	10/10	10/10	8/10	VA of finger counting at 2-feet distance	corrected VA hand-held Rose- nbaum screener of 20/400	BCVA 20/100	20/100 with −1.00–0.50x4	1/10
Anterior segment	normal	normal	normal	normal	normal	normal	normal	normal	normal
Photomotor Reflex	conserved	conserved	conserved	conserved	conserved	conserved	conserved	conserved	conserved
Ocular tone (mmHg)	14	10	12	normal	normal	13	normal	14	normal
Fundus biomicroscopy									
Right eye	Large SRD	No SRD	SRD posterior pole	SRD	SRD involving macula.	SRD involving macula.	central SRD several cotton wool spots	SRD affecting the posterior pole	SRD involving macula.

(Continued)

Table 1. Continued

Case reports	R. Hage *et al.* [4]	R. Hage *et al.* [4]	R. Hage *et al.* [4]	Teodoru *et al.* [6]	Sreeram *et al.* [7]	Gupta *et al.* [8]	Gundlach *et al.* [9]	Inan *et al.* [10]	Current case
Left eye	Large SRD	SRD involving macula	SRD posterior pole	Large DSR	SRD involving macula.	SRD involving temporal aspect of the retina and extending into the macula	central SRD several cotton wool spots	SRD affecting the posterior pole	SRD involving macula.
OCT									
Right eye	Large SRD	No SRD	SRD posterior pole	SRD involving macula.	massive subret- inal fluid	SRD involving macula.	central SRD intra-retinale fluide	SRD the center of the macula Intraretinal fluid	SRD involving macula.
Left eye	Large SRD	SRD involving macula	SRD posterior pole	Large DSR involving macula	massive subretinal fluid	SRD involving macula.	central SRD intraretinale fluide	SRD the center of the macula Intraretinal fluid	SRD involving macula.
Management									
Therapeutic abstention	+	+	+	−	−	+	+	+	+
Treatment	−	−	−	+dexamethasone+ pentoxifylline	+Sulfat Mg diuretics	−	−	−	−
Evolution									
Aggravation of SDR	+	−	−	−	−	−	−	−	−
Fundus biomicroscopy[a]	Agravation of SDR	No aggravation	No data	No aggravation	No aggravation	No aggravation	No aggravation	No aggravation	No aggravation
Biology test control									
HELLP Sd	+	−	−	+	−	−	+	+	+
Visual acuity recovery	+ (10/10)	+(9/10)	+ (10/10)	+ (10/10)	+ (20/30)	+	+(10/10)	+ (10/10)	+ (10/10)
Recovery time days	60	60	30	14	30	No data	180	9	30

+: Yes; −: No; BCVA: best-corrected visual acuity; SRD: Serous Retinal Detachment; OCT: Optical Coherence Tomography. [a]Between day 1 and day 2.

retinal detachment. Significant retinal vascular anomalies and retinal tears are generally not associated with this condition [2].

A recent literature review revealed that pre-eclampsia-associated SRD is most commonly bilateral (89%) and more frequently occurs in primiparous women (60%), with primiparity itself being a risk factor for pre-eclampsia [3]. SRD is also often associated with HELLP syndrome. Therefore, a woman with pre-eclampsia and HELLP syndrome would be seven times more likely to develop SRD. However, given the rarity of this condition, it is not possible to establish a significant link between different pre-eclampsia symptoms and the presence of SRD (Table 1).

Additional examinations support the theory that pre-eclampsia-related SRD is caused by choroidal ischemia. Fluorescein angiography reveals delayed perfusion of the choroid, which only begins to fill from the 15th second after injection, followed by significant diffusion of choroidal vessels, while retinal vessels remain unaffected. Indocyanine green angiography confirms this choroidal ischemia, with areas of intermediate-stage choroidal diffusion. OCT also shows numerous areas of retinal pigment epithelium detachment within the SRD [4]. The obstruction of certain choroidal arterioles, likely due to activation of the coagulation cascade, promotes their dilation and hyperpermeability, resulting in ischemia of certain choroidal areas and dye leakage during angiography. It is likely that choroidal ischemia is the cause of pre-eclampsia-related SRD, as suggested by Valluri *et al.* this ischemia is reversible without treatment and does not leave any short-term sequelae, as the majority of cases described in the literature recover normal or subnormal visual acuity, regardless of the extent of detachment [5].

SRD generally does not require specific treatment in most cases. It tends to resolve on its own within an average of seven weeks, with a maximum resolution time of 12 weeks. Monitoring blood pressure is essential for managing the condition, and in cases where severe signs of pre-eclampsia are present, fetal extraction may be necessary [4].

CONCLUSION

In Conclusion, it is important to consider the potential occurrence of SRD related to pre-eclampsia when a patient experiences visual symptoms in the third trimester of pregnancy or during the post-partum period. This rare pathology has a favorable prognosis and can occur even after delivery. Furthermore, in cases where SRD is detected during the third trimester of pregnancy, pre-eclampsia should be systematically investigated as a potential underlying cause.

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CONFLICT OF INTEREST STATEMENT

None declared.

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AUTHOR CONTRIBUTIONS

(I) Conception and design: Benlghazi Abdelhamid; (II) Administrative support: None; (III) Provision of study materials or patients: Houda Brarrou, Benlghazi Abdelhamid; (IV) Collection and assembly of data: Benlghazi Abdelhamid; (V) Data analysis and interpretation: Houda Brarrou Benlghazi Abdelhamid; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her/images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

STATEMENT THAT THE MANUSCRIPT HAS BEEN READ AND APPROVED BY ALL THE AUTHORS

We, the undersigned authors, have read and approved this manuscript and confirm that all requirements for authorship as previously stated in this document have been met. We believe that this manuscript represents honest work.

ETHICAL APPROVAL

Not applicable.

CONSENT FOR PUBLICATION

Written consent has been obtained from the patient for the publication of this case report.

GUARANTOR

Benlghazi Abdelhamid.

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