

CHARACTERIZATION OF SD-OCT FINDINGS IN PREECLAMPTIC WOMEN WITH VISUAL SYMPTOMS

Keywords

OCT, optical coherence tomography, preeclampsia.

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None

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None



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ABSTRACT

introduction & aim

Preeclampsia is a pregnancy complication characterized by high blood pressure and proteinuria that begins after the 20th week. Visual symptoms concern up to 25% of patients with severe preeclampsia and 50% of patients with eclampsia. In this study we present 5 patients with mild to severe preeclampsia, which were referred to our Ophthalmology department due to visual disturbances during the onset of the preeclampsia or after delivery. There have been only few reports describing OCT (optical coherence tomography) findings in preeclampsia to date and we aim to describe the characteristics of the SD-OCT (spectral domain) imaging study in the acute phase and during the follow-up.

methods

All patients were examined with slit-lamp biomicroscopy and OCT. The most common complaint was blurry vision, which started during preeclampsia onset or after delivery. The most common finding in our study was bilateral serous retinal detachment (SRD), in some cases with macular involvement, that resolved spontaneously; followed by peripapillary fluid and photoreceptor and retinal pigmented epithelium layer (RPE) irregularity. The most common sequel was hyperreflective points in NIRS images, which are consistent with RPE mottling. These were more remarkable in a patient with "HELLP" syndrome (a severe complication of preeclampsia), who displayed many deposits over the RPE layer.

conclusions

SD-OCT can be very helpful in the initial examination and follow-up, due to its ability to detect early minimal amount of subretinal fluids. Preeclampsia should be treated urgently by a gynecologist, and the antihypertensive treatment combined to the delivery can improve the ophthalmologic condition rapidly.

INTRODUCTION

Preeclampsia is a pregnancy complication characterized by high blood pressure and proteinuria that begins after the 20th week. Visual symptoms concern up to 25% of patients with severe preeclampsia and 50% of patients with eclampsia^{1,2}.

There have been only few reports describing OCT findings in preeclampsia to date³ and we aim to describe the characteristics of the SD-OCT imaging study (Heidelberg Spectralis and Cirrus HD-OCT 500, Zeiss) in the acute phase and during the follow-up.

METHODS

From September 2015 to October 2016, 4 patients with visual disturbances were referred to our Ophthalmology Department (Hospital de Basurto, Bilbao, Spain) during hospitalization in Gynecology due to mild to severe preeclampsia. Another patient came to the E&A department after two days with blurry vision, which appeared to be the first manifestation of a HELLP syndrome (Hemolysis, Elevated Liver enzyme levels, and Low Platelet levels; a life-threatening complication of preeclampsia). All patients were examined with slit-lamp biomicroscopy and OCT. We retrospectively studied the funduscopy and OCT exams looking for common features. In order to characterize them, we used some descriptions which have been used before in similar studies. We looked for the following features in the funduscopic exam:

1. Serous Retinal Detachment (SRD);
2. Macular Edema;
3. Peripapillary fluid;
4. Retinal Hemorrhages;
5. Cotton wool exudates.

Moreover, we searched the following characteristics in the OCT exams, following the guide of other previous publications⁴:

1. Foveal contour flattening;
2. Subretinal fluid (peripapillary and/or subfoveal);
3. Ellipsoid line irregularity;
4. Abnormality at retinal pigment epithelium (RPE) level (irregularity or lesion);
5. Others such as intraretinal fluid.



RESULTS

The most common complaint was blurry vision (counting fingers to 6/6), which started during preeclampsia onset or after delivery. 8 of the 10 eyes presented variable-sized SRD (3 of 5 patients had bilateral SRD, which represent a larger case of series than others presented before⁵). We were unable to perform full examination on two patients due to their unstable condition. Those patients we could examine fully during the first visit showed macular edema in 3 of 8 eyes, peripapillary fluid in 3 of 8 eyes, a foveal hemorrhage in 1 of the eyes (Figure 1). Retinal OCT showed foveal contour flattening in 2/5 eyes, subretinal peripapillary and/or subfoveal fluid in 7/10 eyes, irregularity or lesion of RPE in 1/3 eyes and intraretinal fluid in 1/3 eyes. The regions with intraretinal fluid, showed color irregularity, with dark and grey areas in the diffuse near-infrared spectroscopy (NIRS) (Figure 3). During the follow-up, all SRD resolved in a period between a week and a month, after antihypertensive treatment and delivery. However, after 3 weeks, 2 of 3 patients had hyperreflective points in NIRS. These were more remarkable in the patient with HELLP syndrome, who had many deposits over the RPE layer⁶ (Figure 2). Finally, one patient showed in 3 cotton wool exudates, consistent with retinal thickening, and showing hyperreflectivity of mid and internal retinal layers.

In figure 1 we can appreciate the progression of one of the patients, who developed SRD and retinal hemorrhages in her left eye.

In figure 2 we can observe the OCT progression of another patient, with HELLP syndrome, a major complication of preeclampsia, with liver involvement and platelet decrease. The left eye showed subfoveal edema with RPE mottling, which resolved almost completely within 1 month.

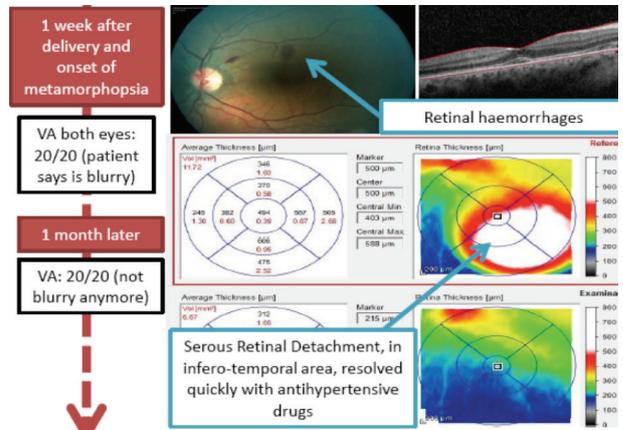


Figure 1. This 35-year-old woman suffered Metamorphopsia since delivery, but we could only assess her a week later, when she was discharged from Intensive Care Unit.

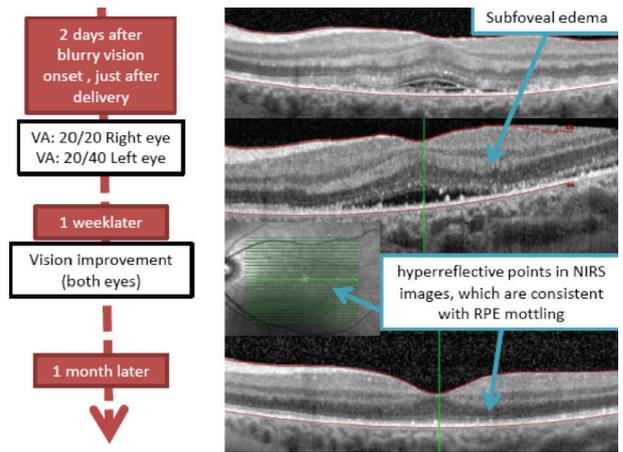


Figure 2. Severe preeclampsia (with HELLP syndrome, which is a life-threatening complication of preeclampsia) was diagnosed after this 30-year-old patient consulted in a Private Ophthalmology clinic for bilateral loss of vision. In that moment bilateral Serous Retinal Detachment was found. Cesarean section was performed urgently.

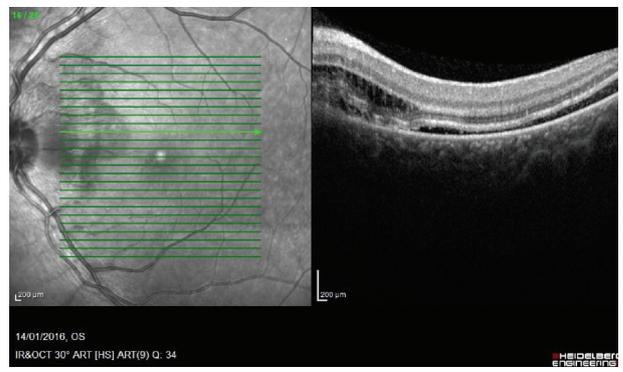


Figure 3. Subretinal and intraretinal fluid in another patient, showing color irregularity, with dark and grey areas in the diffuse near-infrared spectroscopy (NIRS).



DISCUSSION AND CONCLUSIONS

A funduscopic examination should be performed in every patient with preeclampsia and blurry vision as long as her overall condition permits it, and if we are not delaying any urgent treatment. SD-OCT can be very helpful in the initial examination and follow-up, due to its ability to detect early minimal amount of subretinal fluids. The most common finding in our study was bilateral SRD, in some cases with macular involvement that resolved spontaneously; followed by peripapillary fluid and photoreceptor and RPE irregularity. The most common sequel was hyperreflective points in NIRS images, which are consistent with RPE mottling. These were more remarkable in the patient with HELLP syndrome⁷, who displayed many deposits over the EPR layer. The cotton wool exudates show hyperreflectivity of mid and internal retinal layers and probably are related to retinal mid and internal vascular plexus⁷. Preeclampsia should be treated urgently by a gynecologist, and the antihypertensive treatment combined to the delivery will improve the ophthalmologic condition rapidly.

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