

Multimodal Imaging Approach for the Diagnosis of a Challenging Case of Bilateral Chronic Central Serous Retinopathy

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Abstract

Central serous retinopathy is one of relatively common clinical conditions, it is an idiopathic disorder characterized by a localized serous detachment of the sensory retina at the macula due leakage from the choriocapillaris through focal or diffuse retinal pigment epithelial defects. Usually affects the middle age people. Risk factors include type A personality, use of systemic steroids, stress, pregnancy and autoimmune diseases. The acute course of the disease (ACSR) usually spontaneously resolved within 3-6 months in 80% of cases, while the chronic course (CSCR) lasting more than 12 months. Multimodal new imaging techniques like Swept Source OCT (SS-OCT), FAF (Fundus Autofluorescence), FA (Fluorescein Angiography) and ICG (Indocyanine Green) are necessary to diagnose atypical cases of CSCR that may be misdiagnosed as an inflammatory sensory detachment that leading to inappropriate treatment and visual loss.

Keywords: Central serous retinopathy; Multimodal imaging; Choroiditis; Posterior uveitis

Introduction

Central Serous Chorioretinopathy (CSC) is the fourth most common retinopathy that threatening the vision after age related macular degeneration, diabetic retinopathy and retinal vascular diseases [1]. It is defined as serous retinal detachment most often in the macula, with or without Pigment Epithelial Detachment (PED) [2]. The clinical presentation, including blurring of vision, metamorphopsia, reduced contrast sensitivity and dyschromatopsia [3]. Atypical and chronic CSCR may be misdiagnosed as chorioretinal inflammatory conditions, leading to inappropriate treatment. This usually leads to the worsening of CSCR with irreversible retinal damage and visual impairment. In our case, we use a multimodal retinal imaging for the diagnosis of an atypical bilateral CSCR that was treated as posterior uveitis.

Case Report

A 45-year-old male, medically free, presented with decreased vision in both eyes of 8 months duration that was started in the Right Eye (RE) and then involving the Left Eye (LE) after 6 months from the right. The patient was diagnosed initially as a case of idiopathic bilateral posterior uveitis (Multifocal choroiditis, Harada, Serpiginous choroiditis) based on negative work up for infectious and non-infectious uveitis and on OCT (Optical Coherence Tomography) that showed a bilateral multifocal areas of neurosensory detachment with sub-foveal turbid fluid and thick choroid. The patient had been treated with several courses of oral steroids and one intravitreal triamcinolone injection in the right eye with no improvement. On examination, his Best Corrected Visual Acuity (BCVA) was 20/100 in the right eye (RE) and 20/40 in the Left Eye (LE). Anterior segment examination was negative with no signs of anterior uveitis. Dilated fundus exam of both eyes showed a bilateral normal optic disc, bilateral sub-foveal yellowish fibrin deposition with areas of retinal pigmentary epithelial changes [4-7]. The vitreous in both eyes was clear with no signs of vitritis (Figure 1). DRI Triton (TOPCON, Tokyo, Japan) multimodal imaging camera, was used to evaluate the case. Swept Source Optical Coherence Tomography (SS-OCT) images showed bilateral sub-foveal hyperreflective fibrin deposition with adjacent areas of shallow hypo reflective subretinal fluid and foci of (RPE) Retinal Pigment Epithelial detachment (Figure 2).

We evaluated the choroidal thickness by using a line scan mode in DRI SS-OCT that generate a B scan image computed from 96 scans

for the same line to give a high definition image of vitreous, retina and choroid. One-line SS-OCT B scan images showed an increase in the choroidal thickness in both eye, which was $[590 \mu\text{m} \pm 50]$ in the right eye and $[618 \mu\text{m} \pm 50]$ in the left eye (Figures 3A and 3B).



Figure 1: The Triton Swept Source OCT technology using 1050 nm light that enable better tissue penetration and clear image of vitreous, retina and choroid in a single capture.

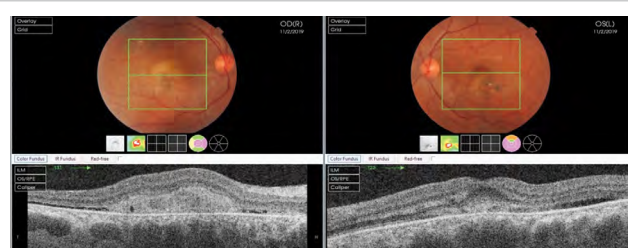


Figure 2: Bilateral sub-foveal hyperreflective fibrin deposition with adjacent areas of shallow hypo Reflective Subretinal Fluid and foci of (RPE) retinal pigment epithelial detachment.

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Fundus Autofluorescence (FAF): Showed bilateral speckled areas of hyperautofluorescence as shown in Figure 4. Fluorescein Angiography (FA) revealed bilateral perifoveal multifocal pinpoint hyperfluorescent leakage areas with a classical “gravitational tract” (Figure 5). Indocyanine green angiography was not included, because the dye not registered in Jordan. Based on FAF and FA findings, the case was diagnosed as a case of chronic CSR, the corticosteroids were stopped. As photodynamic therapy was not available in our clinic, a single intravitreal injection of aflibercept was performed in the both eyes followed 4 weeks later with 577 nm yellow micro pulse laser treatment that applied to the active focal RPE leaking areas on FA. One month later, BCVA in the right eye improved from 20/100 to 20/30 and in the left eye from 20/40 to 20/25 with improvement in the foveal anatomy on OCT (Figures 6A and 6B).

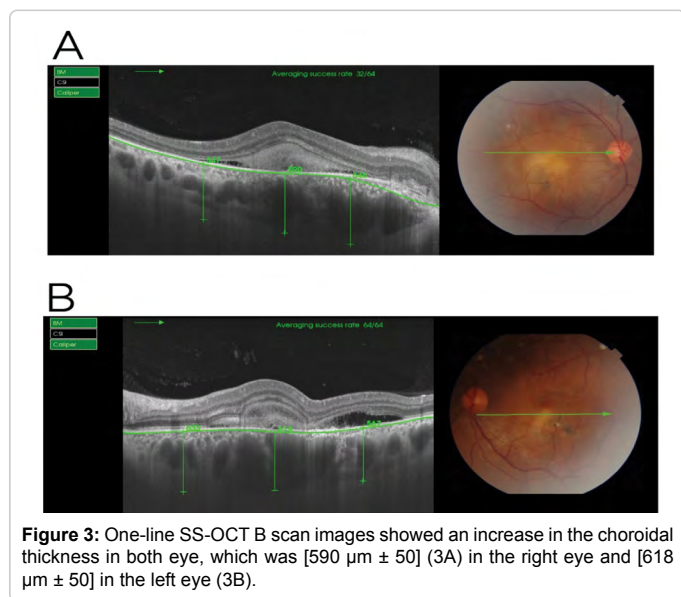


Figure 3: One-line SS-OCT B scan images showed an increase in the choroidal thickness in both eye, which was [590 μm ± 50] (3A) in the right eye and [618 μm ± 50] in the left eye (3B).

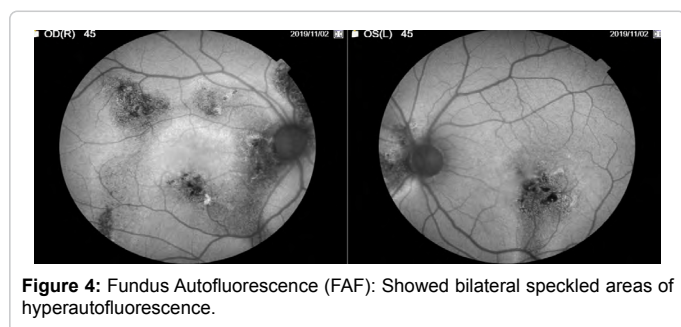


Figure 4: Fundus Autofluorescence (FAF): Showed bilateral speckled areas of hyperautofluorescence.

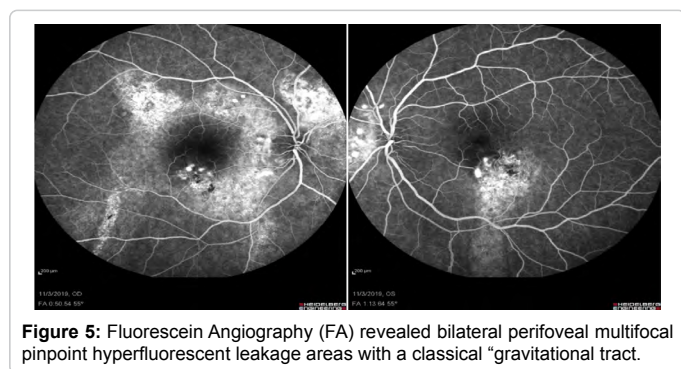


Figure 5: Fluorescein Angiography (FA) revealed bilateral perifoveal multifocal pinpoint hyperfluorescent leakage areas with a classical “gravitational tract”.

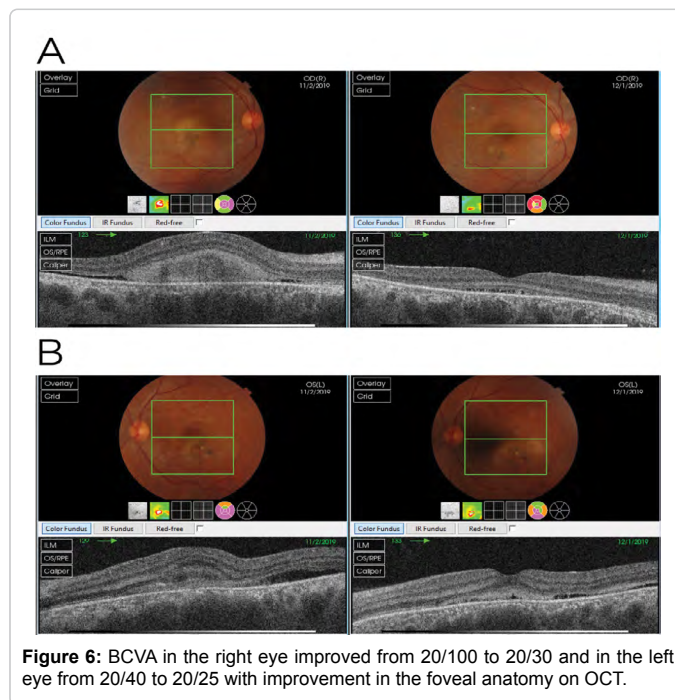


Figure 6: BCVA in the right eye improved from 20/100 to 20/30 and in the left eye from 20/40 to 20/25 with improvement in the foveal anatomy on OCT.

Discussion

Atypical cases of CSCR may represents a diagnostic challenge. Such cases may be misdiagnosed as posterior uveitis like multifocal choroiditis, Vogt Koyanagi Harada, posterior scleritis. The dependence on one image modality like (OCT) to diagnose such cases is inappropriate. The use of systemic or intraocular steroids in these cases is not only ineffective, but it may lead to the worsening of CSCR and severe drop of vision [4]. A transient increase in the choroidal thickness was associated with acute posterior uveitis like multifocal choroiditis, VKH and white dot syndrome, this entity often occurs in eyes with CSC and called (pachychoroid) [5,6]. The increase in the choroidal thickness in our case of CSCR is a part of pathophysiology of this disease that including choroidal congestion and hyperpermeability [7] and this sometimes represents a diagnostic dilemma especially with the other cases of posterior uveitis that associated with increase in choroidal thickness also. The use of multimodal imaging OCT, FA, FAF can provides us clues for correct approach and diagnosis, the speckled hyperautofluorescence on FAF and gravitational zones on FA were helpful for us to reach to the correct diagnosis and treatment in our case.

Conclusion

Atypical cases of CSCR need a careful approach and good analysis. The use of multimodal imaging is the best way to differentiate CSCR from other chorioretinal inflammatory cases to avoid visual loss resulting from misdiagnosis or mismanagement.

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