

Early Findings in Spectral Domain Optical Coherence Tomography in the Diffuse Subretinal Fibrosis Syndrome: Case Report

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Abstract

Diffuse subretinal fibrosis syndrome (DSFS) is a rare posterior uveitic syndrome characterized by chronic inflammation and fibrosis that threatens the vision of affected patients. In this report, we present the case of an individual with DSFS and characterize the evolution of retinal lesions with spectral domain optical coherence tomography. Furthermore, we show that immunosuppressive therapy alongside intravitreal bevacizumab may reverse the progression of retinal lesions.

Keywords: Uveitis; Posterior Uveitis; Choroiditis; Bevacizumab; Immunosuppressive Therapy

Abbreviations

DSFS: Diffuse Subretinal Fibrosis Syndrome; RPE: Retinal Pigment Epithelium; SD-OCT: Spectral Domain Optical Coherence Tomography Spectral Domain; VEGF: Vascular Endothelial Growth Factor; VA: Visual Acuity; RE: Right Eye; LE: Left Eye; CBCV: Brazilian Center for Visual Sciences; IS-OS: Inner and Outer Segments; MFC: Multifocal Choroiditis; PIC: Panuveitis, and Punctate Inner Choroiditis; POHS: Presumed Ocular Histoplasmosis Syndrome

Introduction

Diffuse subretinal fibrosis syndrome (DSFS), originally described by Palestine and colleagues in 1984, is a posterior uveitic syndrome characterized by chronic, usually bilateral, inflammation of unknown origin associated with the appearance of fibrous yellow-white subretinal lesions and extensive coalescent plaques [1]. Vision loss is typically a consequence of fibrous plaque formation in the macula, atrophy of the retinal pigment epithelium (RPE) and photoreceptors, macular edema, or retinal detachment [2].

Immunosuppression is essential to stopping the progression of DSFS, which, if left untreated, has a poor prognosis.

In this case report, we use spectral domain optical coherence tomography spectral domain (SD-OCT) to demonstrate the evolution of retinal lesions in the early stages of DSFS, and how immunosuppressive treatment associated with anti-VEGF (vascular endothelial growth factor) bevacizumab may reverse the trend of retinal changes.

Materials and Methods

A complete clinical examination, fundus photography, tomographic section obtained by SD-OCT, and angiography by indocyanin green and sodium fluorescein was performed.

Case Report and Discussion

A 23 year old female seamstress, presented in June of 2012 with spots of progressive, painless loss of visual acuity (VA) in her right eye (RE). She had no symptoms in her left eye (LE).

In January of 2014, she sought treatment at the Brazilian Center for Visual Sciences (CBCV) in Belo Horizonte for VA impairment in her LE. At the time, she pinholed to 20/400 (RE) and 20/32 (LE). Her eyes were without hyperemia; her anterior chambers were deep and without cellularity or flare; she had vitritis +1/+4 present in the RE; IOPs were 12 mm Hg (RE) and 16 mm Hg (LE). Fundoscopy of the RE revealed an irregular plaque of subretinal fibrosis located in the macular (Figure 1a). Fundoscopy of the LE revealed yellow-white lesions with irregular oval margins dispersed in the macula (Figure 1b).

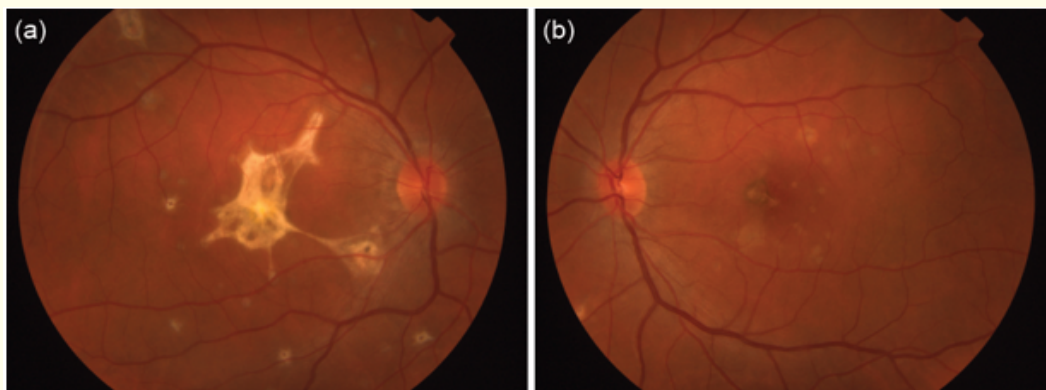


Figure 1: Fundus photo of the right eye with macular fibrous plaque (a), and of the left eye with multiple oval yellow-white lesion associated with circumvallate pigmented lesions in the area of the fovea (b).

The differential diagnosis included syphilitic retinitis, toxoplasmosis, tuberculosis, and viral infections, as well as Vogt-Koyanagi-Harada syndrome and other causes of choroiditis, including classical multifocal choroiditis.

Oral immunosuppressive therapy was initiated with prednisone (initially 60 mg/day, decreased gradually to 10 mg/day), cyclosporin A (150 mg/day) and azathioprine (200 mg/day) to attempt to control any autoimmune inflammatory process. Intravitreal bevacizumab (1.25 mg) was also given to the LE to reduce intraretinal edema.

In spite of treatment, there was a decrease in VA to 20/250 in the LE, with progression of subretinal lesions associated with disruption of the inner and outer segments (IS/OS) of the photoreceptor layer, an increased number of hump-shaped lesions located in Bruch's membrane/RPE complex and extending to the outer plexiform layer, perifoveal intraretinal edema (Figures 2a and 2c), and choroidal neovascularization of the fovea (Figures 3a and 3b).

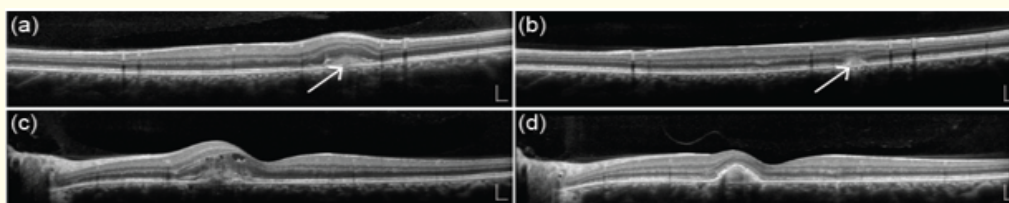


Figure 2: Tomographic section of the left eye obtained by SD-OCT before (a and c), and after (b) treatment with immunosuppression and bevacizumab. (a) Hump-shaped lesion in the outer retinal layers (arrow), (b) reduction of the lesion (arrow). (c) Intraretinal edema associated with neovascularization, and (d) resolution of edema and encapsulation of the neovascular membrane. Scale: 200 μm.

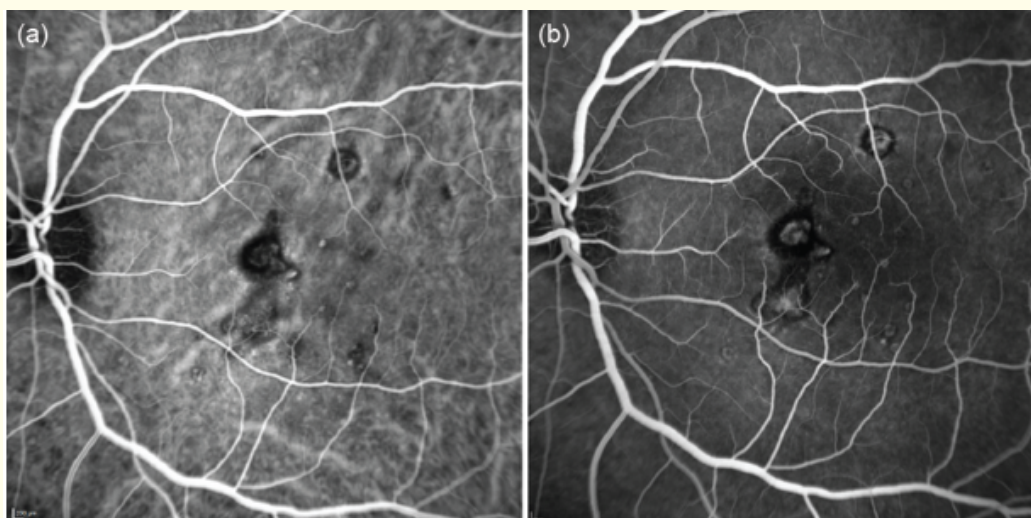


Figure 3: Angiography of the left eye showing choroidal neovascularization by indocyanin green. (a) and sodium fluorescein (b) in the peri- and parafoveal regions.

Azathioprine was substituted with mycophenolate mofetil (1 g/day). Intravitreal administration of sub-tenon triamcinolone was started as an adjunct to bevacizumab in the LE. We subsequently observed improvement in the LE VA to 20/25 with organization of the IS/OS, disappearance of the subretinal lesions, and resolution of the macular edema (Figures 2b and 2d).

DSFS must be differentiated from multifocal choroiditis (MFC), panuveitis, and punctate inner choroiditis (PIC), the latter two being associated with increased prevalence in women and elevated risk of new-onset neovascularization [2]. MFC in turn must be distinguished from presumed ocular histoplasmosis syndrome (POHS) [2].

Some authors consider DSFS and MFC to be a single entity with a spectrum of presentations [3-5]. Histopathologic studies have demonstrated similarities between the two entities, mainly in the formation of subretinal fibrosis which is more extensive in DSFS. However, it is as present unknown if the etiology, metabolic processes, and clinical manifestations between these diseases are different. In the preceding case, we observed clinical manifestations of DSFS in the right eye and MFC with choroidal neovascularization in the left eye.

Retinal histopathology of shows a normal retinal structure with replacement of the RPE by amorphous connective tissue, scattered inflammatory cells, irregular cell islands containing large amounts of cytoplasm and cells with elongated nuclei, and granular pigmentation with inflammatory granulomas [3,6]. One potential source of the amorphous connective tissue are the Müller cells and RPE, although this is not known. Kim, *et al.* (1987) showed metaplasia of the RPE cells responsible for the formation of subretinal fibrosis [7]. Recent studies have demonstrated the ability of RPE cells to become metaplastic [8].

Evaluation by SD-OCT had demonstrated the presence of infiltrating choroidal lesions, submacular detachment, RPE atrophy, RPE fibrosis, and RPE fibrosis with sub-nodes as the initial choroidal changes in DSFS [9]. In the present case report, SD-OCT showed intraretinal edema, disorganization of the IS/OS layer, and nodular hyperreflective lesions located in Bruch's membrane and the RPE complex. Treatment with immunosuppression and intravitreal anti-VEGF and sub-tenon triamcinolone resulted in resolution of the Bruch's membrane/RPE complex lesions, re-organization of the IS/OS layer, and resolution of the macular edema.

Immunosuppressive agents (cyclosporin, tacrolimus, azathioprine, mycophenolate, infliximab, and rituximab) and glucocorticoids are the first-line treatment for this disease, although therapeutic agents such as anti-VEGF ranibizumab may control macular edema arising as a complication [10,11]. In aforementioned case, control of the inflammatory process was achieved with prednisone, cyclosporine, and azathioprine (which was later substituted with mycophenolate). We chose to not use a glucocorticoid due to a lack of evidence regarding favorable outcomes [2,12]. The macular edema was presumably controlled by the intravitreal bevacizumab.

Conclusions

Correct identification and prompt initiation of immunosuppressive therapy has been shown to improve the prognosis of DSFS. SD-OCT serves as an additional tool to identify disease progression and response to treatment in the retina. Nevertheless, a thorough history and slit lamp examination are irreplaceable in the practice of ophthalmology.

Conflict of Interest

There are no financial interest or any conflict of interest.

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