A Case Of Syphilitic Outer Retinopathy Like Acute Zonal Occult Outer Retinopathy

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ABSTRACT

In this report, we present a case of an ocular syphilis who presented with findings similar to acute zonal occult outer retinopathy. Ocular syphilis may present with keratitis, uveitis, retinal vasculitis, scleritis, optic neuropathy and, rarely, acute zonal occult outer retinopathy. It should be kept in mind that syphilis is a mimicry disease, may cause atypical clinical findings and can be treated with penicillin.

Keywords: Acute zonal occult outer retinopathy, Electroretinography, Syphilis, Syphilitic outer retinopathy

INTRODUCTION

Syphilis is an infectious disease caused by a spirochaete, namely Treponema pallidum (T. pallidum), which is the most important cause of infectious uveitis. Although its prevalence in decreased owing to penicillin treatment and protective measures, a dramatic increase has been reported in the syphilis incidence in developed countries. Syphilis is also known as "Great Imitator" as it may progress with multi-organ involvement and lead various clinical symptoms. Although there is a risk for transmission through blood transfusion and organ transplantation, syphilis is mostly transmitted through direct contact to lesion. Serological tests are used for screening, diagnosis and response to treatment in syphilis. Natural course of untreated syphilis has 4 different stages including primary, secondary, latent and tertiary syphilis.[1,2]

The Center of Disease Control and Prevention (CDC) defines ocular syphilis as clinical symptoms and findings compatible with ocular infection or inflammation at any stage of syphilis. Although ocular syphilis manifests with clinical symptoms mimicking different ocular disorders, it mostly presents as posterior uveitis and panuveitis.[2,3] In the literature, there are publications reporting cases with syphilis-related outer retinopathy which was termed as syphilitic outer retinopathy (SOR).[4,5]

Here, we aimed to present a SOR case manifested with acute zonal occult outer retinopathy (AZOOR)-like symptoms.

CASE REPORT

A 50-years old women otherwise healthy presented to our clinic with impaired vision and central scotoma started one week ago in the left eye. In initial examination, best-corrected visual acuity (BCVA) by Snellen charts was 20/25 in the right eye and 20/63 in the left eye. Ocular movements were normal and intraocular pressure was normal whereas there was no abnormal finding in the anterior segment examination. No pathological sign was observed in direct and indirect light reflexes. In the fundus examination, the right eye was normal while there was no abnormal finding other than effacement of optic disc margins in the left eye (Figure 1). On optical coherence tomography (OCT) images, right eye was normal while it was seen that there was in places effacement of outer retinal layers and loss of photoreceptor inner segment-outer segment junction (Figure 2). Again, nodular elevation at outer segment/retinal pigment epithelium (RPE) junction and punctate hyper-reflectivity at choroid were observed in the same images. There was no marked abnormality in the fundus autofluorescence imaging (FAF) (Figure 3).

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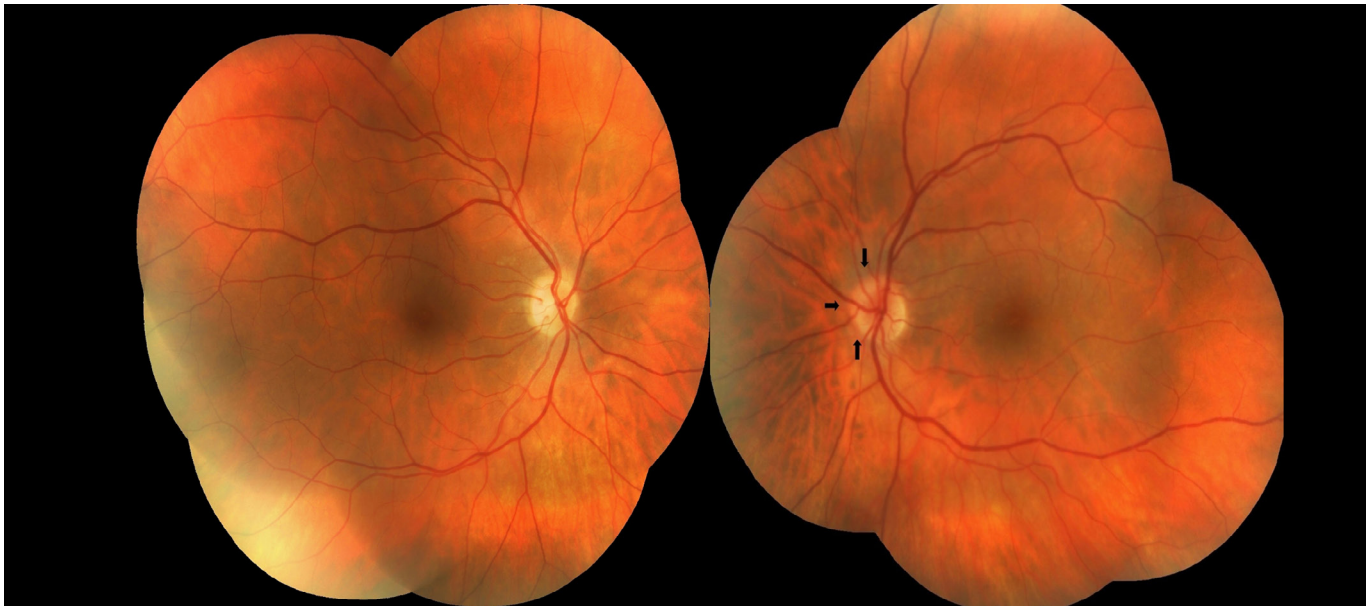

Figure 1: *Color fundus images; right eye is normal while there was slight effacement in the margins of optic disc in the left eye (black arrow).*

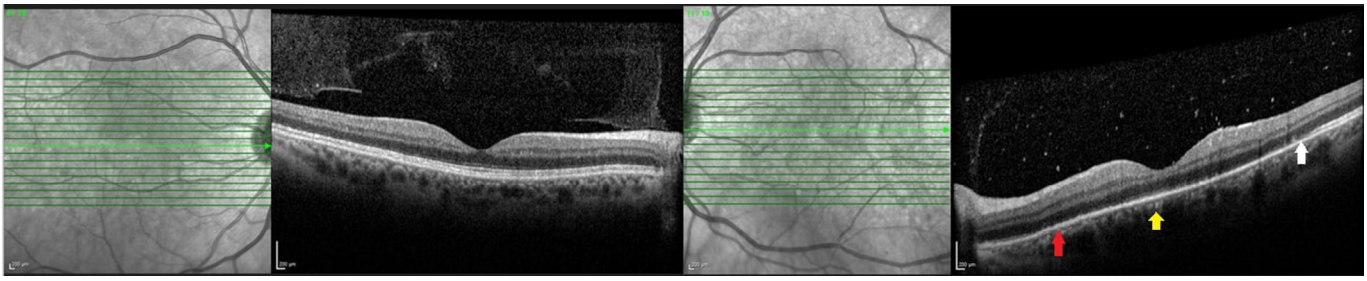

Figure 2: *Macular optical coherence tomography images; right eye is normal while there was effacement at photoreceptor inner-outer junction (white arrow), nodular elevationss at outer segment/retina pigment epithelium junction (red arrow) and punctate hyper-reflectivity at choroid (yellow arrow) are seen in the left eye.*

The laboratory tests including ESR, CRP, ACE, lysozyme, lupus anti-coagulant and anti-cardiolipin antibodies, Quantiferon test and serological studies for HIV, hepatitis B and C, Bartonella and syphilis were performed with initial diagnosis of AZOOR before starting pulse steroid therapy. In addition, electroretinography (ERG) test was found to be normal (Figure 4). Blood tests were within normal range. The patient was diagnosed with neurosyphilis as the TPHA (T. pallidum Hemagglutination Assay) was positive and consulted with neurology department. A lumbar puncture was performed, which showed negative serological syphilis tests in cerebrospinal fluid. Thus, the patient diagnosed as ocular syphilis and intravenous penicillin G therapy was started. At the patient's 3-month follow-up, the BCVA of the left eye was 20/25, and the borders of the left oftic disc were normal (Figure 5). It was seen that effacement at outer retinal layers were resolved on OCT images (Figure 6).

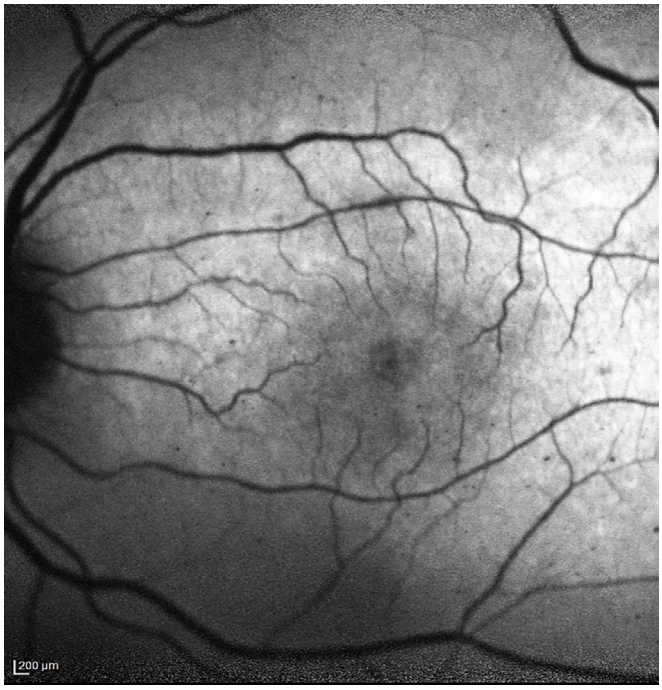

Figure 3: *No marked abnormality is seen fundus autofluorescence of left eye.*

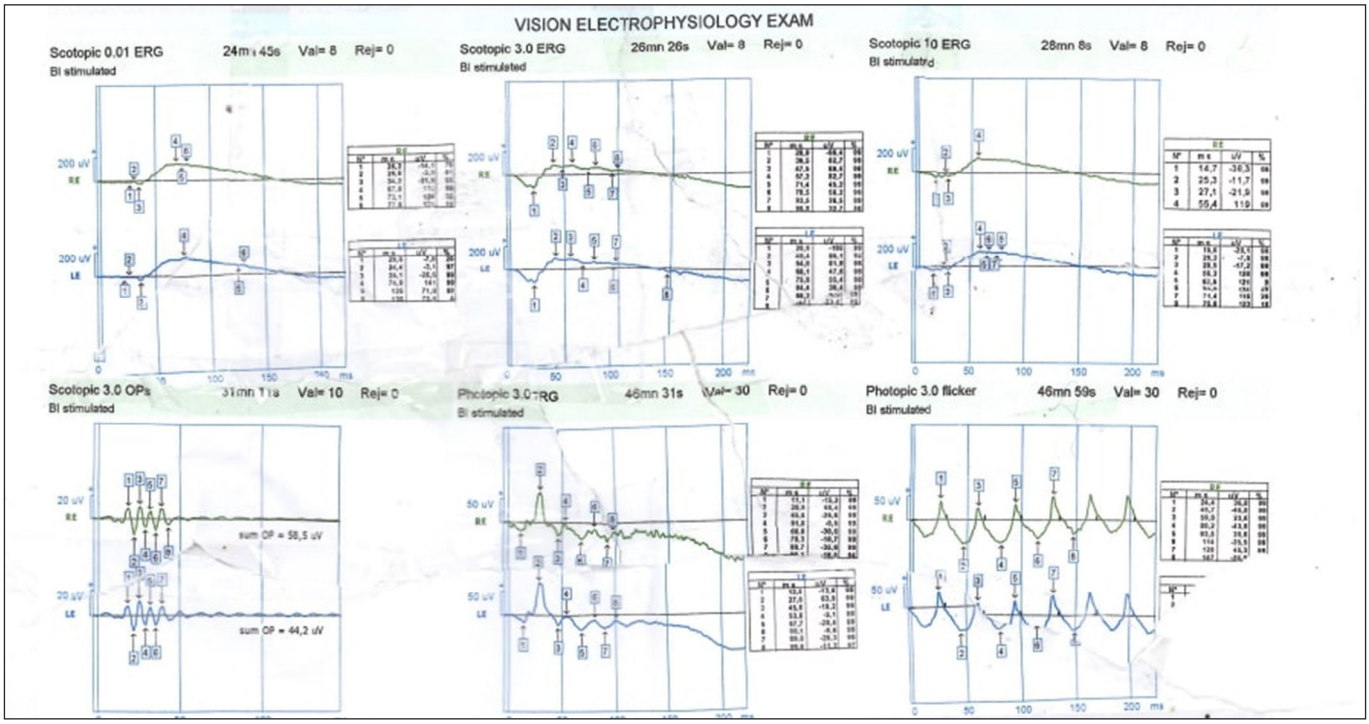

Figure 4: *Electroretinography values are normal for both eyes.*

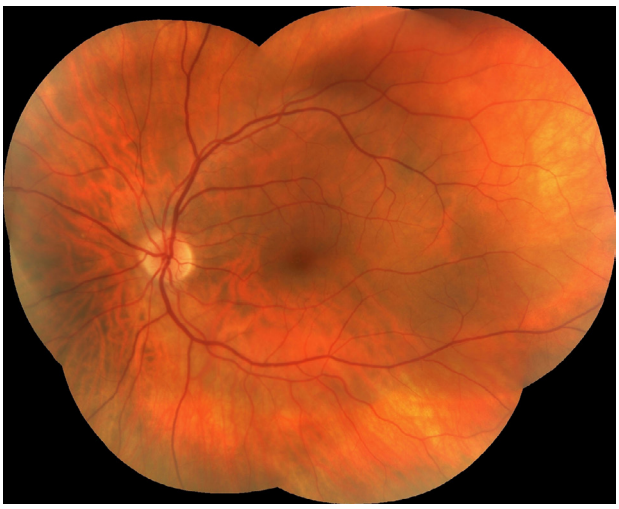

Figure 5: *In color fundus image, optic disc margins can be observed clearly in left eye after penicillin therapy.*

DISCUSSION

Ocular syphilis may occur at any stage of the disease, it can be seen as the first sign of syphilis as well. Ocular involvement of syphilis has no pathognomonic finding and manifests a wide spectrum ranging from eyelid to cranial nerves involved in extra-ocular movements.[6] In our case, ocular syphilis manifested with involvement of outer retinal layers suggestive of AZOOR.

Acute zonal occult outer retinopathy was first described as a syndrome characterized by sudden photophopsia and scotoma related to functional loss of outer retinal layers by Gass in 1992.[7] In general, it occurs with acute scotoma and decreased visual acuity in younger women. Visual field defect is the characteristic sign of the disease.

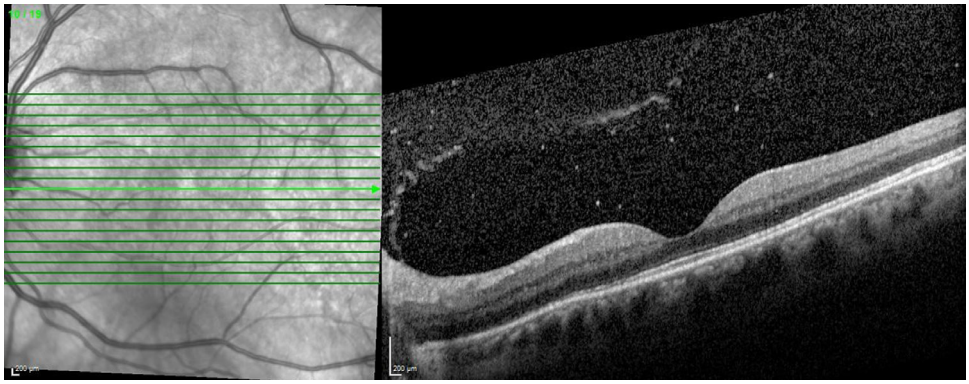

Figure 6: *On optical coherence tomography images of left eye, it is seen that effacement at outer retinal layers are recovered and nodular elevation att outer segment/retinal pigment epithelium junction and punctate hyper-reflectivity at choroid are regressed.*

Enlargement of isolated or multiple visual field defect-related blind spot is the most commonly seen visual field defects. On OCT, derangement of photoreceptor inner-outer segment, thinning or effacement of outer nuclear layer, RPE derangement and/or decreased retinal thickness are seen at areas corresponding to scotoma.[8] Trizonal pattern seen on multi-modal imaging techniques and lesion progression is pathognomonic for AZOOR. Progression is defined as the widening of the lesion border and lesion size. Trizonal pattern, particularly hyper-autofluorescence line separating normal retina from AZOOR, on FAF is a definitive characteristic of AZOOR.[9] ERG is considered as a critical test in the diagnosis. Abnormal ERG is observed in majority of cases and the diagnosis of AZOOR should be questioned if ERG is normal in the patient. Although its efficacy hasn't been proven, it was reported that intravenous pulse methyl prednisone therapy followed by oral prednisolone over 3 months improved visual field .[8]

Outer retinopathy without visible ophthalmoscopic lesions was reported as a symptom of syphilitic uveitis.[5,6] This clinical entity has similar symptoms with AZOOR and is termed as SOR. [7] Despite being rare, it was reported that ocular syphilis may involve outer retinal layers in isolated manner.[4,5,9] It is thought that SOR develops secondary to autoimmune reaction triggered by antibodies against T.pallidum.[4] The presence of anti-cardiolipin antibodies may lead temporary focal choroidal thrombosis and photoreceptor dysfunction.[10] In a study using multi-modal imaging techniques to evaluate SOR cases, no fundoscopic change was observed in mot cases while minimal RPE changes were observed in a few cases and minimal optic disc edema was detected in one case. On OCT images, ellipsoid zone defect, hyper-reflective nodules in RPE, hyper-reflective dots in choroid and finger-like protrusions at outer retina could be seen but no subretinal fluid was detected. In most cases, diffuse granular hyper-autoflorescence was detected in macula on FAF images; however, no pathological finding was detected in a few cases.[11] In our case, external limiting membrane separated by a sharp border and ellipsoid zone loss on OCT images suggested AZOOR while nodular elevation at outer segment/RPE junction and punctate hyper-reflective findings in choroid on OCT, lack of pathognomonic trizonal pattern on FAF imaging and normal ERG responses excluded diagnosis of AZOOR. Inoue et al. found that there was reduced amplitudes, prolongation in implicit times in ERG of two cases with SOR and ERG responses returned to normal after treatment[12]; however, ERG test was found to be normal in our case.

In patients presenting with acute zonal occult outer retinopathy, the suspicion of SOR is vital in the early diagnosis and treatment.[5] Zafar et al. reported a case of SOR who presented with AZOOR-like findings, was diagnosed with ocular syphilis as the patient progressed to panuveitis after oral streroid treatment was initiated, and improved with intravenous penicilin treatment.[13] Unlike AZOOR in which there is no treatment with proven efficacy and oral corticosteroid is beneficial in some cases, SOR can be treated and has excellent visual prognosis with appropriate antibiotic therapy; thus, it is important to make accurate differential diagnosis.[14,15]

Recovery can be achieved in majority of cases if syphilis is diagnosed early and treated timely. If diagnosis of syphilis is delayed or syphilis treated inappropriately, the disease can progress into tertiary syphilis and result in significant morbidity and mortality due to cardiovascular and neurological complications.[1] Cerebrospinal fluid abnormalities were detected in approximately 60% of patients with syphilis. Thus, lumbar puncture should be performed in all patients with ocular syphilis to determine whether there is central nervous system involvement.[3] According to CDC syphilis treatment guideline, ocular syphilis is considered as neurosyphilis and treated with parenteral penicillin G.[16]

The diagnosis of ocular syphilis was made by serological tests and multimodal imaging techniques in our case presented with AZOOR-like involvement at outer retinal layers, papillitis and normal ERG. Due to the high frequency of co-occurrence with neurosyphilis, our case was evaluated with lumbar puncture and the diagnosis of neurosyphilis was excluded. Unlike AZOOR with no definitive treatment which leads visual field defects and persistent RPE changes in most cases, ocular symptoms and findings were resolved without sequel by penicillin G in our patient.

In conclusion, ocular syphilis with increasing prevalence in recent years can manifest with inflammation of outer retinal layers. Restoration of outer retinal layers and improved visual acuity were achieved with appropriate antibiotic therapy at early stage in our patient with SOR who presented with AZOOR-like symptoms. The differential diagnosis of SOR should be kept in mind in cases manifested with inflammation of outer retinal layers.

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