American Journal of Ophthalmology Case Reports 15 (2019) 100489

Contents lists available at ScienceDirect

American Journal of Ophthalmology Case Reports

journal homepage: www.elsevier.com/locate/ajoc

Case report

Spectral optical coherence tomography findings in an adult patient with syphilitic bilateral posterior uveitis and unilateral punctate inner retinitis

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ARTICLE INFO

Keywords:
Posterior uveitis
Ocular syphilis
Punctate inner retinitis
Spectral domain optical coherence tomography
Human immunodeficiency virus

ABSTRACT

Purpose: To describe the spectral domain optical coherence tomography (SD-OCT) features of a punctate inner retinitis, a rare ocular manifestation of syphilis, in an HIV positive adult patient.

Observations: In the right eye, SD-OCT images during the active period showed hyperreflectivity of the full thickness of the inner retina, precluding the individualization of the layers. In addition, multifocal areas with higher hyperreflectivity were identified within the affected retina. Once the lesion became inactive, SD-OCT images revealed inner retina layers atrophy, disruption of the ellipsoid layer, and multifocal damage to the retinal pigment epithelium layer.

Conclusion and importance: Punctate inner retinitis affects the full thickness retina, leading to severe retinal damage, along with multifocal damage of the retinal pigment epithelium. The multifocal white retinal lesions observed within the affected retinal area correlated with the presence of intense hyperreflective dots within the retina showed by SD-OCT. These lesions are deeper than was described in other reports.

1. Introduction

Syphilis is a sexually transmitted systemic infectious disease, caused by the spirochete *Treponema Pallidum*.[1] Its incidence has been increasing from the beginning of this century, likely related to unprotected sexual intercourse in the era of highly active antiretroviral therapy for human immunodeficiency virus[1] (HIV).

Syphilis is a rare cause of uveitis, accounting for between 0.7 and 4.5% of cases.[2] Posterior segment involvement of ocular syphilis comprises a great variety of manifestations including, among others, superficial retinal precipitates, exudative retinal detachment, acute syphilitic placoid posterior chorioretinopathy, papillitis, vasculitis, neuroretinitis, chorioretinitis, and retinitis.[1,3]

Punctate inner retinitis was described as a confluent retinitis with multiple superficial infiltrates within the retina.[4] In this case, we describe the features from spectral domain optical coherence tomography (SD-OCT) of a case of peripheral punctate inner retinitis on one eye, in a patient with bilateral syphilitic posterior uveitis.

2. Case report

A 37-year old male patient was admitted to our service with a vision loss in his right eye (OD) of 2-month duration. He had a history of post-streptococcal glomerulonephritis that needed renal transplantation 4 years ago. He was taking Tacrolimus 4 mg daily, Mycophenolate mofetil 2000 mg daily, and Metformin 500 mg every 12 hours. He suffered an episode of esophagitis 7 months ago.

Two months before admission, he experienced a vision loss in his OD. He was admitted to another service where after a presumptive diagnosis of an acute retinal necrosis, he was treated with intravenous acyclovir 10 mg/kg three times daily for two weeks and 1000 mg intravenous methylprednisolone pulse therapy for three days, with a dramatic improvement of his vision. Mycophenolate mofetil was withdrawn. He was discharged with oral meprednisone 60 mg/day and oral acyclovir 800 mg 5 times a day. Immediately after this switch of the medication, he suffered an impairment of his vision, and therefore he was referred to our hospital.

At examination, best corrected visual acuity (BCVA) was 20/60 and 20/20 in his OD and left eye (OS), respectively. At slit lamp examination, 1 + anterior chamber inflammatory cells and 1 + anterior

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https://doi.org/10.1016/j.ajoc.2019.100489
Received 29 July 2018; Received in revised form 7 March 2019; Accepted 3 June 2019
Available online 07 June 2019

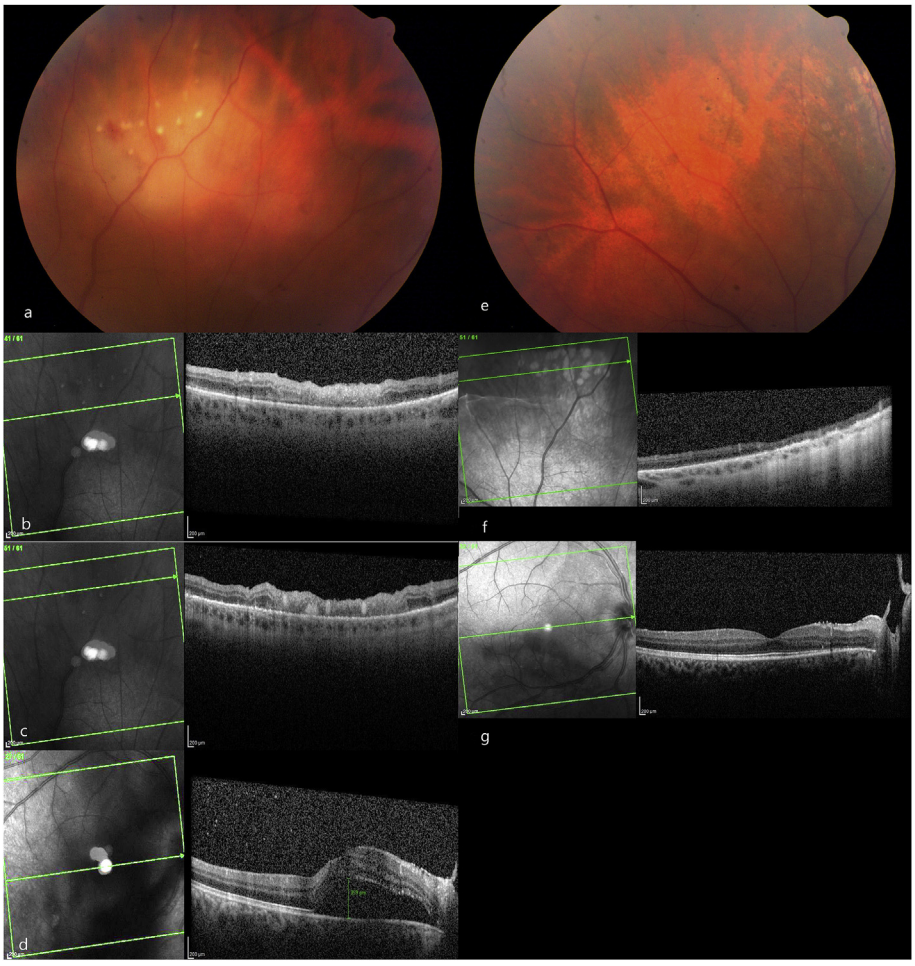

Fig. 1. a) OD color fundus photograph. Multiple white infiltrates apparently located at the retinal surface can be seen, resting on an area of the retina with a "ground glass" appearance at the superior nasal periphery. b) SD-OCT at the level of the "ground glass" retina. Hyperreflective dots infiltrating the retina were observed, precluding the individualization of the layers, with the exception of the RPE. A barely apparent serous retinal detachment can be observed in the temporal border of the retinal lesion. c) SD-OCT at the level of the apparently superficial retinal white dots. Focal areas of dense hyperreflectivity within the retina were observed. d) SD-OCT at the level of the fovea. A serous foveal detachment can be appreciated. Image quality is poor due to vitreous haze. e) OD color fundus photograph after antibiotic treatment. Note the presence of multifocal areas of RPE atrophy at the superior nasal periphery. f) SD-OCT at the level of the focal depigmented lesions. Note the inner retina layers' atrophy and focal disruption of the RPE layer. The underlying choroid seems to be unaffected. g) SD-OCT at the level of the fovea. Note the resolution of the foveal serous detachment. . (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

vitreous cells were observed in OD while 0.5 + anterior chamber inflammatory cells and 0.5 + anterior vitreous cells were present in OS. Intraocular pressure was of 21 mmHg and 18 mmHg in OD and OS, respectively. Fundus examination revealed 1 + vitreous haze, papillitis, and multiple white infiltrates apparently located at the retinal surface, resting on an area of the retina with a "ground glass" appearance at the superior nasal periphery in OD (Fig. 1a). The OS had two retinal whitish lesions located over superior nasal periphery (Fig. 2a) and superior temporal arcades (Fig. 2b), papillitis, and a clear vitreous.

An SD-OCT (Spectralis, Heidelberg) on both eyes was performed. In OD, at the level of the "ground glass" retina, hyperreflective dots infiltrating the retina were observed precluding the individualization of the layers, with the exception of the retinal pigment epithelium (RPE) (Fig. 1b). At the level of the apparently superficial retinal white dots, focal areas of dense hyperreflectivity within the retina were observed. (Fig. 1c). At the level of the fovea, a serous retinal detachment was observed in OD (Fig. 1d). In OS, the fovea was without remarkable signs, with the exception of some hyperreflective dots at the level of the vitreous, and an elevated papilla, corresponding to an inflammation of this structure (Fig. 2c).

In anamnesis, he reported having suffered from recurrent oral and genital ulcers and maculopapular lesions on palms and soles. Serologic tests revealed positive results for VDRL, FTA-ABS, and HIV. Cerebrospinal fluid examination yielded a positive VDRL. The CD4 count was 392 cell/mm^3 and viral load was 906,000 copies/ml.

He was treated for neurosyphilis with intravenous penicillin G 4,000,000 U every 4 hours for 2 weeks. Acyclovir and cotrimoxazole were withdrawn and corticosteroids were tapered.

At two months of follow-up, the visual acuity was 20/20 in both eyes. At fundus examination, vitreous haze had disappeared from both eyes. In OD, the presence of multifocal areas of RPE atrophy at the superior nasal periphery was observed (Fig. 1e). In OS, a mild persistent papillitis and multifocal areas of RPE atrophy at superior nasal periphery were also noted (Fig. 2d). The SD-OCT images revealed inner retina layers' atrophy and disruption of the ellipsoid and RPE layers with resolution of the foveal serous detachment in OD (Fig. 1f and g). In OS, a persistent elevated temporal border of the optic disk was noted, while the fovea was normal, and the hyperreflective dots at the vitreous had disappeared (Fig. 2e).

3. Discussion

The most common presentation of syphilis in the eye is uveitis.[5] Uveitis develops in about 10% of cases of secondary syphilis and in up to 5% of cases who progress to the tertiary stage.[6]

Syphilitic ocular inflammation may be unilateral or bilateral and it can involve the anterior, intermediate, or posterior segment.[5] The predominant type of syphilitic uveitis diverges in different case series.[6–8]

Syphilitic chorioretinitis may present as focal,[1] multifocal,[9] confluent, placoid, or punctate inner retinitis.[4] Punctate retinitis with inner retinal and preretinal white dots are an unusual feature of ocular syphilis and reports are scarce. Fu et al. described the clinical findings in 8 patients with a diagnosis of ocular syphilis who had retinal precipitates. They observed in those patients the presence of creamy yellow superficial retinal precipitates overlying areas of retinitis.[3]

Reddy et al. reported a patient with multiple preretinal collections resting on a "ground glass" appearing retina. This area of retinitis was

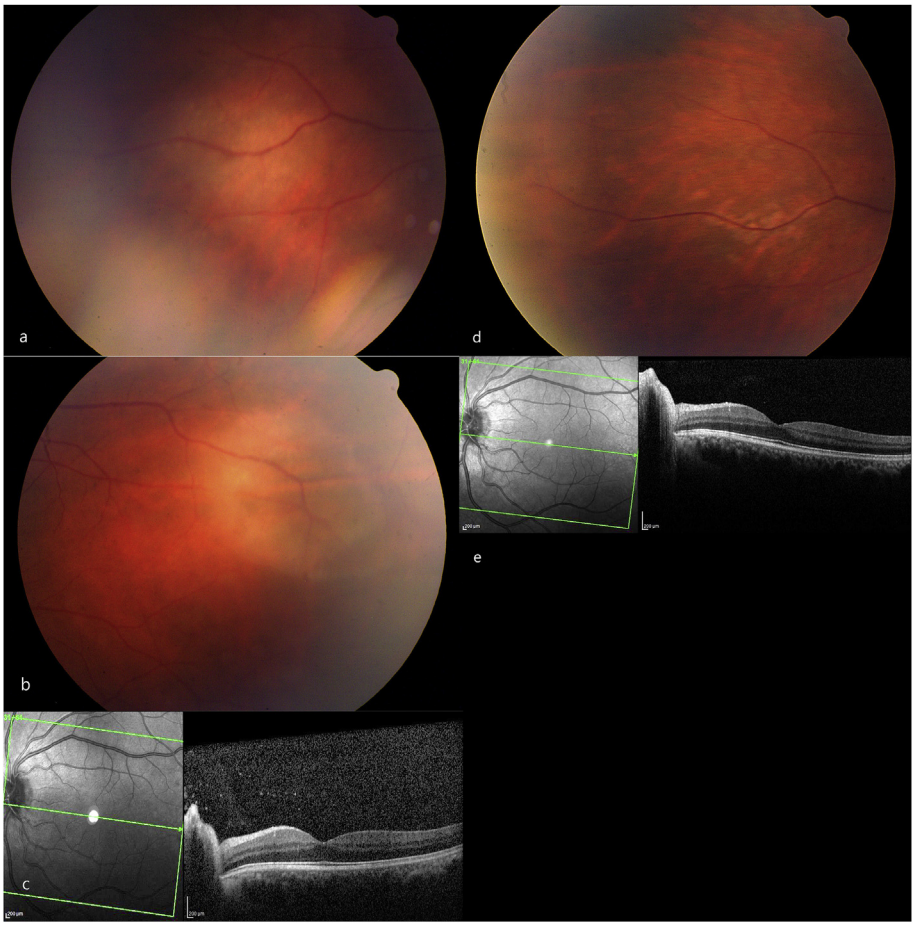

Fig. 2. a) OS color fundus photograph. A whitish retinal lesion located at the superior nasal periphery can be noted. b) color fundus photograph. A whitish retinal lesion located over the superior temporal vascular arcades can be observed. c) SD-OCT at the level of the fovea. As can be noted, the foveal structure was without remarkable signs. Note some hyperreflective dots at the level of the vitreous, and an elevated papilla, corresponding to an inflammation of this structure. d) OS color fundus photograph after antibiotic treatment. Multifocal areas of RPE atrophy at the superior nasal periphery can be observed. e) SD-OCT at the level of the fovea. A persistent elevated temporal border of the optic disk can be noted. The fovea was normal, and the hyperreflective dots at the vitreous disappeared. . (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

detached and was associated with obliterative vasculitis. After treatment, there was resolution of the serous detachment and of the preretinal collections.[10] Moreover, in that case report, the authors described the presence of a juxtapapillary preretinal precipitate studied by means of time domain OCT.[10] Interestingly, this preretinal precipitate was not associated with an area of the retina with ground glass appearance.[10] Therefore, it is unlikely that this precipitate and its OCT findings could be regarded as a characteristic of the peripheral lesion described by Reddy et al.[10] In the present case, the OCT scans were taken through the whitish lesions, which were located in the areas of retinitis. They showed a hyperreflectivity of the retina, which precluded the individualization of the retinal layers with the exception of the RPE, associated with focal lesions within the thickness of the retina characterized by a dense hyperreflectivity.

Wickremasinghe et al. described five cases with similar features: confluent inner retinitis associated with multiple preretinal/inner retinal dots and arteriolar retinal vasculitis.[4] These findings are consistent with the manifestations that are observed in the present case, with the exception of the absence of retinal arteriolitis. At presentation in our service, the patient had been receiving a high dose of oral corticosteroids, with a previous administration intravenous pulses of methylprednisolone for three days. It is likely that the vascular inflammation was not observed by the time of the patient admission due to this medication history.

Curi et al. were the first to show the intraretinal location of syphilitic multifocal retinitis in two patients by SD-OCT, distinguishing them from superficial retinal precipitates.[9] The intraretinal hyperreflective lesions described in that brief report were very similar to the intraretinal lesions observed in the present case report, with the exception that the latter were also surrounded by a hyperreflective retina, which precluded the distinction of the individual layers. They also described in the follow-up the formation of focal retinochoroidal scars after antibiotic treatment.[9] However, there is no documented follow-up of those lesions by OCT.[9] In the present case, as was shown, focal depigmented scars observed in color fundus photographs originated from focal RPE atrophy without evident damage of the underlying choroid.

To our knowledge, currently, there are no reports on OCT imaging for syphilitic punctate inner retinitis. In the present case, it was observed at the level of the “ground glass” appearance retina hyperreflective dots infiltrating the retina, precluding the individualization of the layers with the exception of the RPE. At the level of the apparently superficial multifocal white retinal infiltrates within the affected retina, they were observed in focal areas of dense hyperreflectivity within the thickness of the retina. Therefore, the actual location of these multifocal lesions was deeper in the retina than it was initially thought. These multifocal lesions with higher hyperreflectivity may represent foci with a more intense inflammatory activity within an area of retinitis.

After antibiotic therapy, an atrophy of the inner retinal layers and a disruption of the ellipsoid layer with focal damage of the RPE layer was noted. This was in contrast with the SD-OCT manifestations reported by Schlaen et al. in a case with focal retinitis that showed a mild engagement of the RPE layer.[1] These findings led us to consider syphilitic inner punctate retinitis as a more severe lesion than was presumed formerly.

The previous misdiagnosis of ocular syphilis in this case would have been avoided if non-treponemal and treponemal tests had been performed. High-dose corticosteroid treatment likely led to a transitory visual improvement in this patient, which consequently deepened the diagnostic fail. Notwithstanding, Hoogewoud et al. identified the use of methylprednisolone pulses as a negative predictor of recovery at 1 month in patients with ocular syphilis.[11] In the present case, residual papillitis in OS persisted as long as 2 months after antibiotic therapy.

4. Conclusions

In our patient, syphilitic punctate inner retinitis produced a full thickness damage of the retina with the involvement of the RPE layer, as was shown by SD-OCT imaging. This suggests that this rare form of retinal involvement may be more aggressive than was thought formerly. In this case, the severe retinal damage did not engage the visual outcome due to the distant location from the macular area.

Patient consent

Consent to publish this case report has been obtained from the patient in writing.

Funding

No funding or grant support.

Conflicts of interest

The following authors have no financial disclosures:
A.S., M.P.A., M.S.O., C.C., M.S.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Acknowledgments

None.

References

1. Schlaen A, Ingolotti M, Couto C, Saravia M. Spectral optical coherence tomography findings in an elderly patient with syphilitic bilateral chronic panuveitis. *Am J Ophthalmol Case Rep.* 2018;9:56–61. https://doi.org/10.1016/j.ajoc.2018.01.012.
2. Davis JL. Ocular syphilis. *Curr Opin Ophthalmol.* 2014;25(6):513–518. https://doi.org/10.1097/ICU.0000000000000099.
3. Fu EX, Geraets RL, Dodds EM, et al. Superficial retinal precipitates in patients with syphilitic retinitis. *Retina.* 2010;30(7):1135–1143. https://doi.org/10.1097/IAE.0b013e3181cdf3ae.
4. Wickremasinghe S, Ling C, Stawell R, et al. Syphilitic punctate inner retinitis in immunocompetent gay men. *Ophthalmology.* 2009;116(6):1195–1200. https://doi.org/10.1016/j.ophtha.2008.12.055.
5. Benson CE, Soliman MK, Knezevic A, et al. Bilateral papillitis and unilateral focal chorioretinitis as the presenting features of syphilis. *J Ophthalmic Inflamm Infect.* 2015;5:16. https://doi.org/10.1186/s12348-015-0045-0.
6. Barile GR, Flynn TE. Syphilis exposure in patients with uveitis. *Ophthalmology.* 1997;104(10):1605–1609.
7. Villanueva AV, Sahouri MJ, Ormerod LD, et al. Posterior uveitis in patients with positive serology for syphilis. *Clin Infect Dis.* 2000;30(3):479–485 doi:CID990391 [pii] 10.1086/313689.
8. Amaratunge BC, Camuglia JE, Hall AJ. Syphilitic uveitis: a review of clinical manifestations and treatment outcomes of syphilitic uveitis in human immunodeficiency virus-positive and negative patients. *Clin Exp Ophthalmol.* 2010;38(1):68–74. https://doi.org/10.1111/j.1442-9071.2010.02203.x.
9. Curi AL, Sarraf D, Cunningham Jr ET. Multimodal imaging of syphilitic multifocal retinitis. *Retin Cases Brief Rep.* 2015;9(4):277–280. https://doi.org/10.1097/ICB.0000000000000186.
10. Reddy S, Cunningham Jr ET, Spaide RF. Syphilitic retinitis with focal inflammatory accumulations. *Ophthalmic Surg Laser Imag.* 2006;37(5):429–431.
11. Hoogewoud F, Frumholtz L, Loubet P, et al. Prognostic factors in syphilitic uveitis. *Ophthalmology.* 2017;124(12):1808–1816. https://doi.org/10.1016/j.ophtha.2017.06.003.