Infrared imaging of choroidal involvement in Leber’s idiopathic stellate neuroretinitis

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Purpose: Leber’s idiopathic stellate neuroretinitis (LIN) is a rare condition that has been always considered an inflammatory disease, with emphasis given to the optic disc and neuroretina alterations.

Methods: A healthy 54-year-old woman presented a sudden loss of vision in the left eye, referring to periocular pain, headache, and mild fever for 1 month. Tests of best-corrected visual acuity, optical coherence tomography, infrared (IR) filter, fluorescein, and indocyanine green angiography were performed at the follow-up.

Results: The patient submitted to IR imaging, which revealed diffuse patchy choroidal infiltrates involving the posterior pole midperiphery, which were still present after 3 years of follow-up.

Conclusion: In this observation, we reported that choroidal involvement may occur in LIN. The IR filter is an important and noninvasive tool able to distinguish and follow choroidal infiltrates to better delineate the pathological process and elucidate the nature of the disease.

Keywords: choroid, infrared image, neuroretinitis

Introduction
Leber’s idiopathic neuroretinitis (LIN) is a rare pathologic condition. Presumably a cat scratch disease (CSD), neuroretinitis with negative serological test is self-limiting and characterized by monolateral visual loss, macular star, and optic disc edema. The most common pathological manifestations associated with LIN are papillitis and neuroretinitis.

The disease may be preceded by viral-like symptoms 2 or 3 weeks before the beginning of visual problems. Usually, this pathology affects young patients between the third and fifth decades without any particular prevalence for male or female.

The etiology is unknown, but parafebrile symptoms (eg, headache, mild fever, and weakness) might suggest an infectious cause for LIN.

The diagnosis is generally based on the clinical signs; every serological test should be negative for any infectious disease (with the exclusion of any metabolic distress such as diabetes and hypertension) or other general disease, such as sarcoidosis. The disease is usually self-limiting, with good prognosis for restoration of visual acuity.

Dreyer et al were the first to postulate Bartonella infection as a potential cause of LIN. Historically, the study of this maculopathy has always focused attention on the retina. As suggested by the name, optic disc involvement gives emphasis to the peculiar lipid deposition around the macula that appears 1 or 2 weeks after the beginning of visual symptoms.
In this report, we describe a characteristic choroidal infiltration in a patient with LIN who has been followed with infrared (IR) fundus pictures.

**Case report**

A healthy 54-year-old woman was referred to our clinic with sudden loss of vision in her left eye, which was associated with periocular pain, headache, and mild fever for 1 month. Her general history was negative for hypertension and diabetes. Interestingly, she mentioned having cats in her house.

At the time of the examination, the patient’s visual acuity was 20/20 in the right eye (RE) and 20/300 in the left eye (LE). Humphrey visual field analysis detected a centrocecal scotoma in the LE. Slit lamp examination showed no abnormalities in the anterior segment of either eye.

RE fundus examination was normal (Figure 1A) and the LE revealed significant edema of the optic disc with retinal infiltrates at the posterior pole and a characteristic macular star from yellow exudates (Figure 1B). IR imaging (Heidelberg HRA, wavelength 830 nm) showed some optic disc edema surrounded by subretinal fluid, and diffuse, patchy, choroidal infiltrates involving the posterior pole midperiphery (Figure 2) otherwise invisible on ophthalmoscopy.

Fluorescein angiography (FA) confirmed the optic disc swelling and some hypofluorescence from intraretinal infiltrates was detected (Figure 3A and B). Optic disc swelling and some masked hypofluorescence from the exudates as well as retinal infiltrates were recorded (Figure 3C and D) on indocyanine green angiography (ICG). On early ICG, just some choroidal infiltrates were seen as an area of cho- riocapillaris hypoperfusion (Figure 3C). Optical coherence tomography (OCT) guided by IR imaging was able to confirm different focal loci of subretinal hyper-reflectivity corresponding to the choroidal infiltrates (Figure 3E and F).

Laboratory investigations revealed negative *Bartonella hensalae* Ig-antibodies. Serological work-up was negative for other infectious agents, including *Syphilis, Salmonella, Herpes simplex*, and *Toxoplasma*. The results of chest X-ray, pelvis radiography, and brain magnetic resonance imaging were negative.

On the basis of the diagnosis of presumed chorioretinitis, the patient was treated with bolus of corticosteroids for 3 weeks. Two weeks after therapy, the patient was revaluated. Visual acuity was unchanged in the LE.
Gass and colleagues postulated that CSD may be a possible infectious disease with negative serological test. In a paper by Khurana et al a choroidal involvement detected by ultrasound was reported for a patient positive for CSD but was never clearly imaged. Choroidal thickening was described but never visualized, despite long-term follow up. Mennel et al reported multiple foci of chorioretinitis that developed as chorioretinal spots similar to scars secondary to multifocal choroiditis as clinical signs of the pathology.

In conclusion, the choroidal involvement in LIN is to be considered as an important manifestation of the disease. IR imaging is an important and noninvasive tool able to elucidate clinical features in posterior segments of patients affected by CSD.
distinguish and follow choroidal infiltrates. Because of these novel identifications, LIN has to be considered as a neurochorio-retinitis and should be evaluated as part of differential diagnosis considering other causes of choroiditis.

Disclosure
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References