



# Multimodal imaging reveals pathological edges of disease activity in tuberculosis-associated multifocal serpiginoid chorioiditis



Debarshi Mustafi, Narsing A. Rao, Brian C. Toy\*

USC Roski Eye Institute, Department of Ophthalmology, Keck School of Medicine of the University of Southern California, Los Angeles, CA, USA

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## ABSTRACT

Tuberculosis associated serpiginous-like choroidopathy can lead to significant vision loss. The anatomical cause for this visual decline can be elucidated using multimodal retinal imaging. Imaging modalities used in this case, most notably, optical coherence tomography angiography (OCTA), demonstrated specific atrophy of the choriocapillaris.

## 1. Case report

A 67-year-old Peruvian woman presented with decreased vision, more profound in the right eye (20/200) compared to the left eye (20/40). Slit-lamp exam revealed 1+ anterior chamber cell in both eyes. Fundus examination demonstrated multifocal posterior hypopigmented geographic helicoid lesions, with relative sparing of the juxtapapillary region and fovea in the left eye (Fig. 1A). Fluorescein angiography demonstrated irregular lesion borders with early blockage and late staining whereas indocyanine green angiography demonstrated early and late hypofluorescence of the lesions. Fundus autofluorescence revealed predominant hypoautofluorescence with hyperautofluorescent lesion borders (Fig. 1B). Optical coherence tomography angiography (OCTA) slabs of the superficial and deep retinal capillary plexuses demonstrated preserved retinal vascular flow. Sub-RPE OCTA slabs of the macular region (Fig. 2A) demonstrated discrete flow voids within the choriocapillaris and visualization of underlying larger choroidal vessels at the lesion borders (Fig. 2B). The patient was found to be Quantiferon-Gold positive, and chest radiography revealed multiple pulmonary nodules suggestive of tuberculosis (TB). She was started on anti-TB therapy (ATT) and corticosteroids. At 1-year follow-up, her right eye vision recovered to 20/60 and her left eye remained stable at 20/40 and her OCTA did not show further progression of choriocapillaris atrophy.

## 2. Discussion

Serpiginous choroiditis (SC) is characterized by choroidal inflammation in a peripapillary location with centrifugal spread affecting the choroid and choriocapillaris. Intraocular TB can present with unilateral or bilateral asymmetric, multifocal, irregular, serpiginoid lesions. Compared to SC these lesions tend to spare the juxtapapillary region and are associated with inflammatory cellular reaction in the vitreous and/or anterior chamber.<sup>1</sup> OCTA in multifocal serpiginoid choroiditis demonstrates localized loss of choriocapillaris blood flow that is not apparent on conventional dye-based angiography.<sup>2</sup>

## 3. Conclusion

This case demonstrates that multimodal imaging can delineate edges of TB-associated serpiginous-like lesions and OCTA can localize the disease process to the choriocapillaris.<sup>2,3</sup> It is important to recognize this disease entity, even in non-endemic areas, as proper treatment with ATT and concurrent corticosteroid or immunomodulatory therapy can lead to good visual recovery.

## Author contribution

Debarshi Mustafi: Conceptualization, Investigation, Writing-Draft, Review and Editing, Visualization

Narsing A. Rao: Supervision, Writing-Review and Editing

\* Corresponding author. USC Roski Eye Institute, 1450 San Pablo Street, Los Angeles, CA, 90033, USA.

E-mail address: [brian.toy@med.usc.edu](mailto:brian.toy@med.usc.edu) (B.C. Toy).

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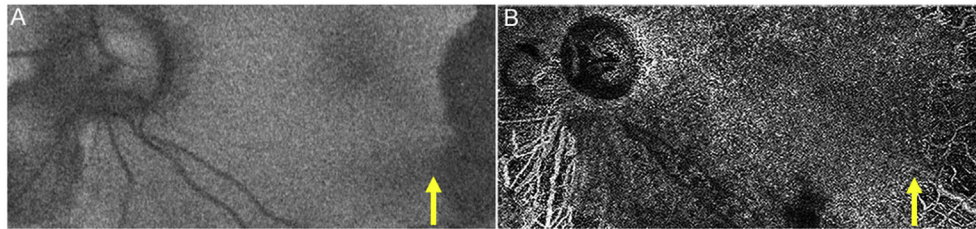
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**Fig. 1.** A: Color fundus and B: Fundus autofluorescence images of the left eye. Fundus imaging showed multifocal serpiginoid lesions (Fig. 1A) with hypoautofluorescence of the serpiginoid lesions and hyperautofluorescent lesion borders (Fig. 1B). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)



**Fig. 2.** A: Fundus autofluorescence image and B: OCTA of the macular region of the left eye. Fundus autofluorescence of the macula delineated the lesion edge (yellow arrow, Fig. 2A). Co-registered OCTA revealed choriocapillaris atrophy at the lesion edge with visualization of the underlying choroidal vessels (yellow arrow, Fig. 2B). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

Brian C. Toy: Conceptualization, Investigation, Writing-Draft, Review and Editing

#### Patient consent

Written consent to publish this case has not been obtained. This report does not contain any personal identifying information.

#### Authorship

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

#### Declaration of competing interest

The authors declare no conflicts of interest.

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