



Atypical unilateral multifocal choroiditis in a COVID-19 positive patient

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ABSTRACT

Purpose: To present a case of an atypical unilateral multifocal choroiditis that occurred in temporal association to an acute covid-19 infection.

Method: A 23-year-old highly myopic man presented with reduced vision in the right eye while under medical quarantine due to direct exposure to COVID-19 infection. Five days after developing mild COVID symptoms (fever, cough and anosmia) he noticed acute painless loss of central vision in his right eye. Systemic evaluation at presentation was positive for SARS-CoV-2 detected via both a pharyngeal swab and serologic titers. Dilated fundus exam was performed, followed by color fundus pictures, optic coherence tomography (OCT), fundus autofluorescence (FAF) and fluorescein angiography (FA).

Results: Fundoscopic examination of the right eye revealed the presence of multiple discrete, slightly elevated yellow-whitish placoid lesions at the posterior pole. The visual acuity was 20/800. The left eye was normal with 20/20 vision. The patient was placed on oral corticosteroids and the lesions rapidly improved.

Conclusion: The patient had an MFC chorioretinitis around the same time that he had a documented acute covid infection. Though the temporal relationship could be by chance alone, communicating this case to the ophthalmic community is warranted to see if other similar cases are noted.

1. Case report

On May 26, 2020, a 23-year-old man was referred for decreased vision in the right eye. He complained of sudden visual loss, several days after developing mild systemic symptoms consisting of fever, cough and anosmia. During the time of onset of ocular symptoms, the patient was under house quarantine due to known exposure of several family members infected with COVID-19, including his mother who was intubated at the hospital. Visual acuity was 20/800 in the right eye and 20/20 in the left eye and intraocular pressure was 12 mmHg in both eyes. No signs of inflammation were noted in either the anterior and posterior segments. Fundus examination of the right eye revealed the presence of four discrete yellow-whitish large petalloid-shaped lesions that appeared slightly elevated in the posterior pole (Fig. 1). The left eye was normal. Fundus autofluorescence (FAF) showed irregular spikes of hypo and hyperautofluorescence corresponding to the lesions in the posterior pole and around the optic disc (Fig. 2). OCT scans through the lesions demonstrated irregular retinal pigment epithelial elevation with diffuse interruption of the outer retinal layers and the retinal pigment epithelium (RPE). Temporal to the fovea, there was an area of outer retinal

disorganization with a focal area of adherence between the retina and underlying choroid and multiple, hyperreflective, vertical finger-like projections extending into the outer retina (pitchfork sign).³ The choroid was thickened. Fluorescein angiography (FA) showed the lesions to block early with mild late staining. There was no disc staining (Fig. 2) A diagnosis of atypical unilateral multifocal choroiditis (MFC) without vitreitis was made. A possibility of a type 2 inflammatory choroidal neovascularization (CNV) was entertained based on the OCT, but the FA did not confirm it. A laboratory investigation was ordered and the patient was started on 40 mg of oral prednisone. A relative rapid resolution of the fundus lesions and visual improvement back to 20/60 was observed after 11 days of treatment. The resolving foveal areas of involvement showed the rapid development of choroidal excavation colocalizing with the four previous active chorioretinal lesions (Fig. 2). The systemic testing was positive for COVID-19 on PCR and negative for syphilis and tuberculosis. On July 21, 2020, laboratory retesting confirmed these results, however with a negative oropharyngeal PCR.

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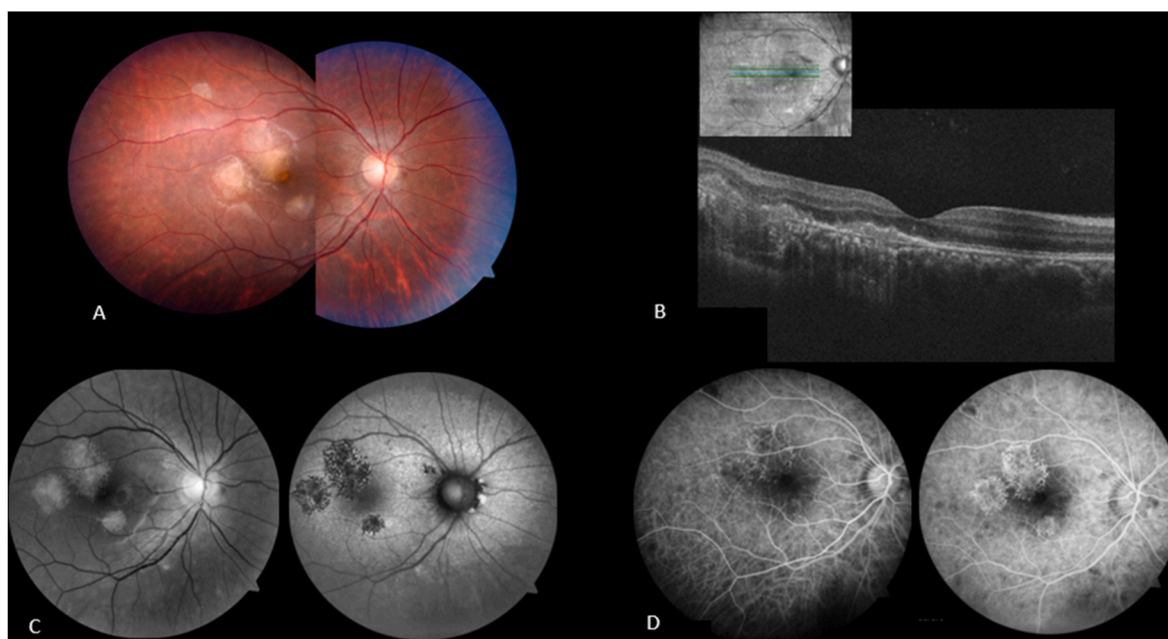


Fig. 1. Multimodal imaging of the right eye. Color photograph shows the four slightly elevated, yellow-whitish petaloid lesions (A) corresponding to subretinal hyperreflective material seen on OCT with interruption of the outer retinal layers and retinal pigment epithelium (B). The lesions are better delineated with their irregular spikes of hypo and hyperreflectivity by infrared, fundus autofluorescence and early/late phases of fluorescein angiography which suggested early blockage and mild light staining (C and D). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

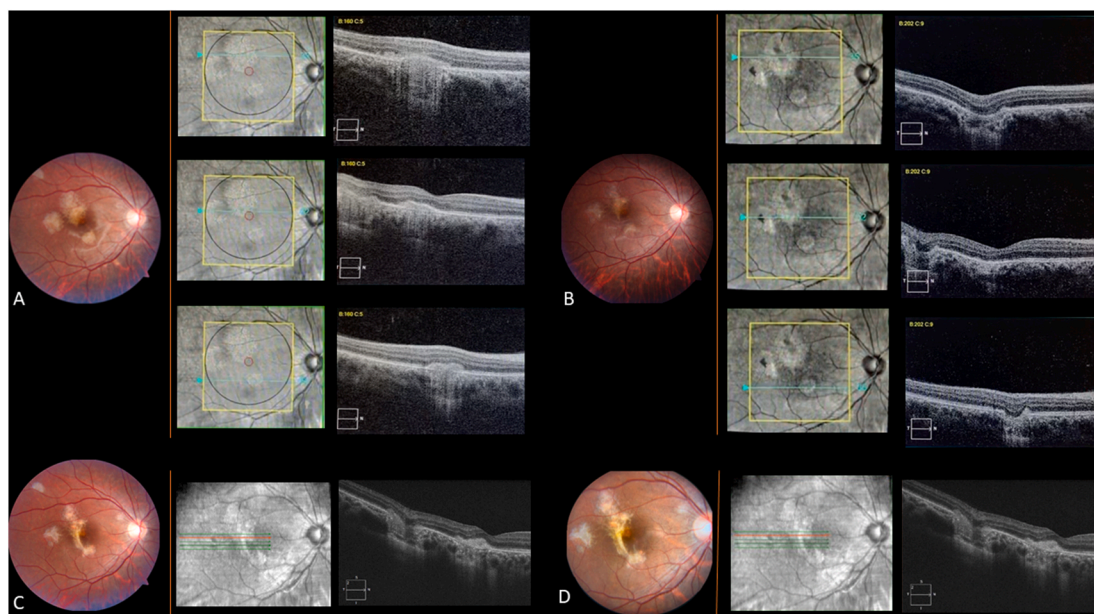


Fig. 2. Color photo, redfree and OCT at baseline presentation (A and C) and after three weeks of oral corticosteroid (B and D). Notice the rapid resolution of the active juxta foveal lesions before (C) and after treatment with corresponding sites of choroidal excavation (D). Notice the OCT scan through the foveal area demonstrating interruption of the outer retinal layers and the retinal pigment epithelium temporally to the fovea and a focal area of subfoveal fibrosis that resembles the punctate inner choroidopathy (PIC) form of MFC. (D). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

2. Discussion

The atypical appearance of the chorioretinal lesions in this patient did not correlate to previously described placoid diseases such as acute multifocal posterior placoid epitheliopathy, serpiginous choroiditis, persistent placoid maculopathy, outer retinal syphilis, or lymphoma in either the acute phase or the rapid healing phase when choroidal excavation developed. Although the temporal association with acute

covid-19 infection in this case has to be considered, no severe posterior segment involvement has been described in patients with covid-19 infection. Moreover, despite millions of covid-19 infected individuals world-wide, intraocular complications such as seen in this patient appear to be quite rare.^{1,2}

So, given the acute inflammatory disease involving the choroid and retinal pigment epithelium in an young, healthy, myopic man, our prompt diagnosis for this patient was idiopathic multifocal choroiditis.

Despite some similarities with classic MFC, the whitish aspect of the lesions with spiculated margins as well as the diffuse outer retinal damage and SHRM without definitive CNV along with the rapid development of choroidal excavation called our attention in this case. And this had been observed before the institution of the corticosteroids in this patient. In the era of covid-19 and telemedicine, we still need to wait for additional cases with complaints of decreased visual acuity to definitively elucidate our case.⁴ Therefore, we emphasize the need for a prompt and complete ophthalmologic examination in these cases including funduscopy.

Patient consent

This report does not contain any personal identifying information.

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Conflicts of interest

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Authorship

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

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