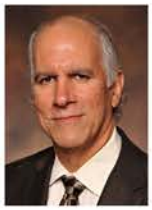
A 37-Year-Old Woman with Vision Changes in her Left Eye

Rohan Jalalizadeh, MD; Daniel P. Joseph, MD, PhD



Introduction:

A 37-year-old woman was referred to the retina clinic for vision changes in her left eye. For the past 3-4 weeks, she had experienced photopsias in her left field of vision in the left eye, as well as a localized temporal scotoma in the left eye. Her central vision remained at baseline, and her right eye seemed unaffected. Her symptoms began gradually, increasing in intensity until they reached their current level 1-2 weeks ago. The day before symptom onset, she received the second dose of the Pfizer-BioNTech® COVID-19 vaccine, for which she had none of the commonly reported side effects apart from injection site soreness. Of note, the patient reports she had a TIA in 2009 during a pregnancy, and workup at that time revealed she was heterozygous for both a Factor V Leiden mutation and a prothrombin II mutation. Since then, she has taken 81 mg aspirin daily with no recurrence of neurologic events.

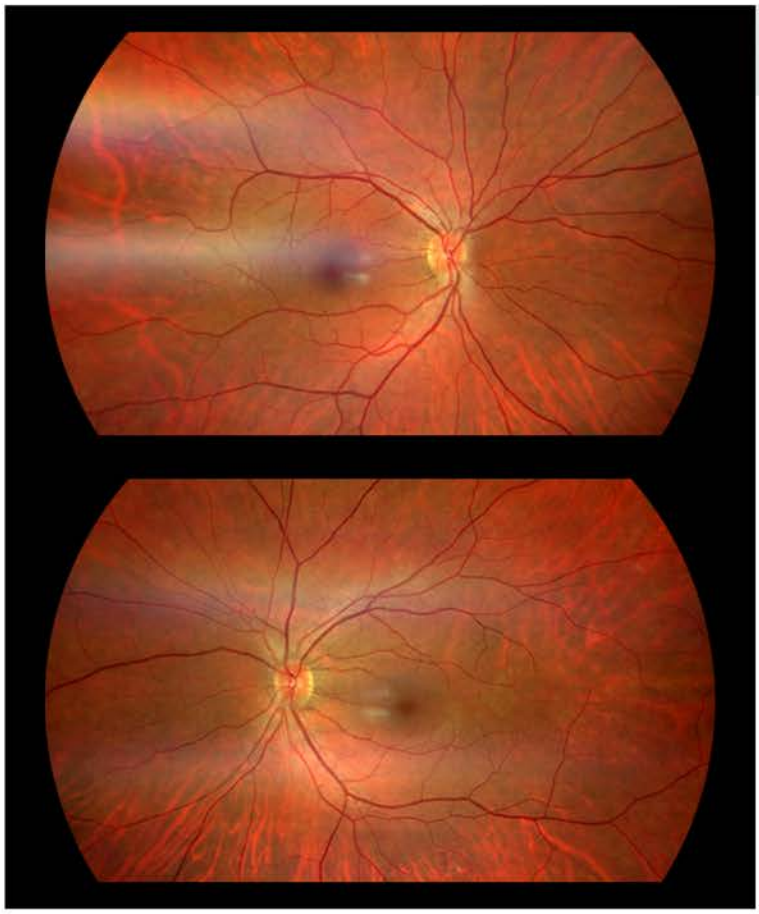


Figure 1. Bilateral color fundus images.

Exam:

Best corrected visual acuity was 20/20 in both eyes. Pupillary responses were normal to light and accommodation in both eyes, and there was no relative afferent pupillary defect. Confrontational visual fields revealed a focal defect in the left field of vision OS, otherwise full. Dilated funduscopic examination showed a normal appearing media, optic nerve, and retina in both eyes (See Figure 1). The anterior chamber and vitreous were clear of inflammatory cells on careful slit lamp examination.

Diagnosis:

To aid in diagnosis, spectral domain optical coherence tomography (SD-OCT) and fundus autofluorescence were obtained. Macular and peripheral SD-OCT were normal in both eyes. Fundus autofluorescence was remarkable for peripapillary and multifocal hyper-autofluorescent patches centered around the optic disc, prominently in the nasal retina (See Figure 2). Fundus autofluorescence of the right eye was normal. Given these findings and the history of onset of symptoms, particularly the temporal association with vaccination, this was felt to represent a case of white dot syndrome secondary to the Coronavirus disease-19 (COVID-19) vaccine.

Follow-Up:

The patient regularly visits her primary care physician and had recently obtained basic labs, including CBC, which were unremarkable. She monitored her symptoms closely and returned two weeks later for follow-up. Her photopsias had nearly resolved, as had her scotoma. On examination, her fundus was normal appearing in both eyes as before. On fundus autofluorescence, her hyper-autofluorescent lesions were significantly less numerous and less intense than previously. SD-OCT was within normal limits in both eyes.

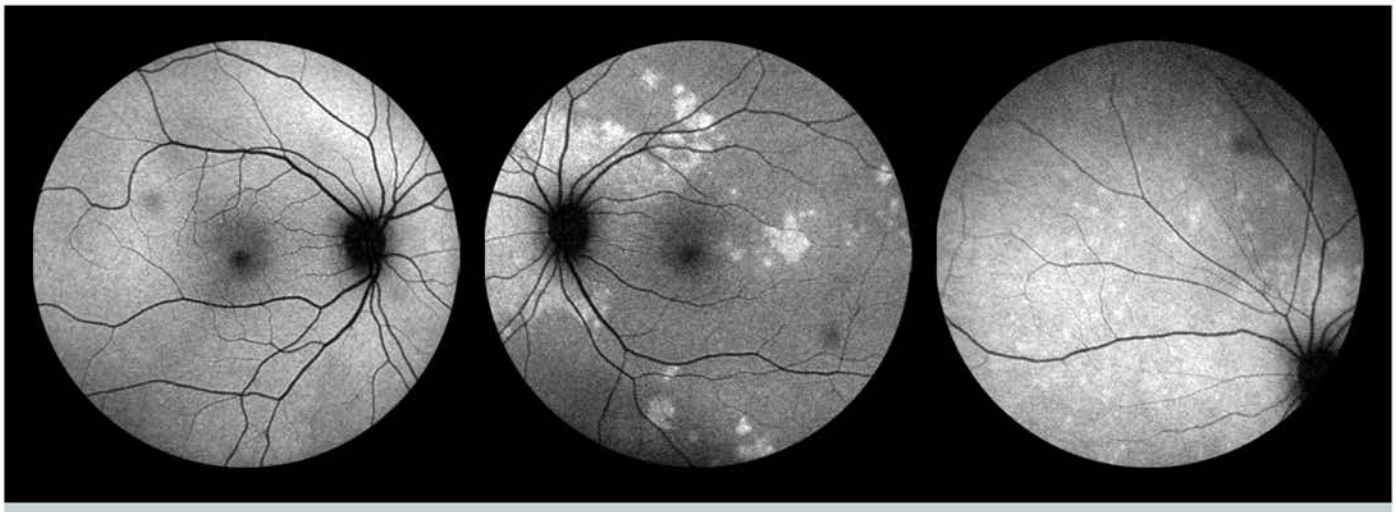


Figure 2. Fundus autofluorescence images of both eyes demonstrating hyper-autofluorescent patches in the left eye.

Approximately nine weeks after presentation, formal visual field testing revealed significantly improved scotoma (Figure 5).

Discussion:

White dot syndromes are a group of inflammatory ciliochoroidopathies, retinal pigment epitheliopathies, and outer retinopathies which share certain clinical features, notably subtle whitish lesions located at the deeper levels of the retina and choroid. They often affect young adults who are otherwise healthy and sometimes have a prodrome of flu-like illness.[1]

The first case of COVID-19 associated with an inflammatory acute outer retinopathy was recently reported, in which a 40-year-old woman developed significant unilateral vision loss shortly after developing fever and myalgias, found to be positive for SARS-CoV-2, the causative virus for COVID-19, with an otherwise negative systemic laboratory workup. The patient's symptoms and multimodal imaging findings improved after 10 days of systemic prednisone.[2] Another case was recently reported of acute macular neuroretinopathy (AMN) following COVID-19 infection, in which a 71-year-old woman developed sudden-onset unilateral decreased visual acuity associated with classic findings of AMN on examination and multimodal imaging, 14 days after systemic symptoms of COVID-19 began. The patient was tested positive for the SARS-CoV-2 virus by reverse-transcription polymerase chain reaction test, and unfortunately her vision loss and imaging findings did not improve after 2 months of follow-up.[3] AMN is a condition that has been previously associated with MEWDS as well as with microvasculopathic risk factors. Another case report describes a patient with findings consistent with acute posterior multifocal placoid pigment epitheliopathy (APMPPE) in a 35-year-old convalescent COVID-19 female patient.[4]

The current report describes the case of self-limited fundus changes with peripheral positive and negative

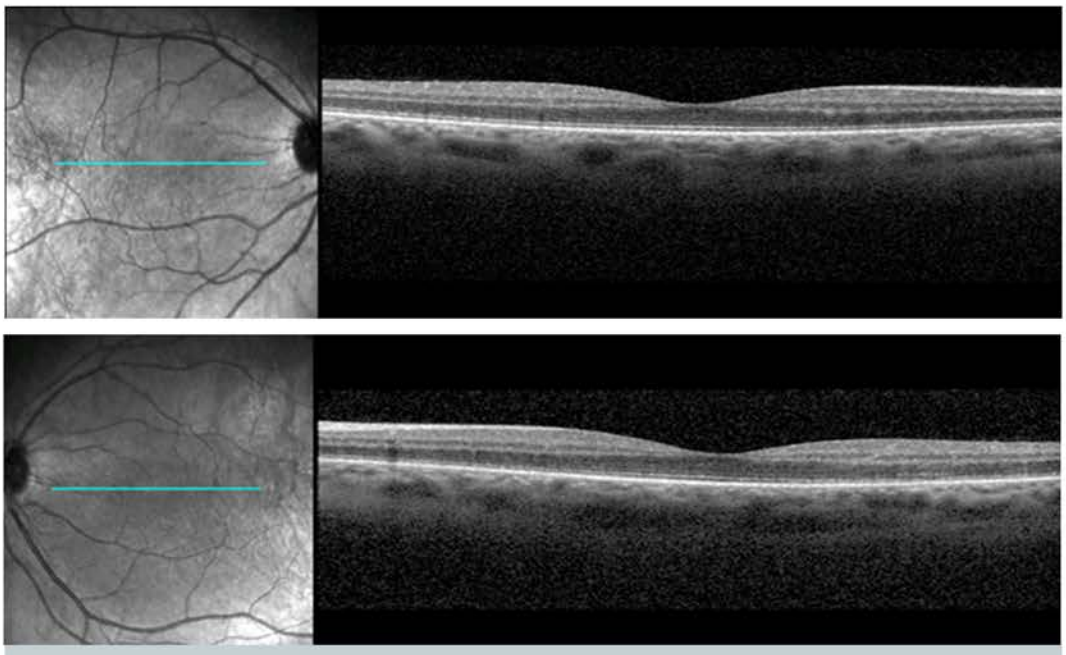


Figure 3. SD-OCT of the macula in both eyes with normal appearance.

visual symptoms in a patient with no known COVID-19 exposure who had recently received her first and second doses of the Pfizer-BioNTech® COVID-19 vaccine. The case differs from the above-mentioned reports in that this patient was not infected with SARS-COV-2, did not develop fever or myalgias, and the degree of vision loss was less severe. However, the case we describe may have developed due to a similar inflammatory response to the COVID-19 vaccine. In particular, the presentation and self-limited nature of this patient's disease course is reminiscent of multiple evanescent white dot syndrome (MEWDS). Several features of MEWDS were notably absent, for instance foveal granularity and foveal disruption of the ellipsoid zone on SD-OCT. Furthermore, a fluorescein angiogram was not performed, which in cases of MEWDS classically shows multifocal wreath-like hyperfluorescent halos.[5]

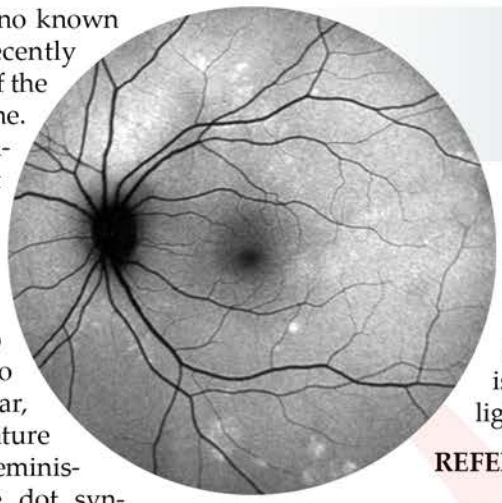


Figure 4. Fundus autofluorescence after two weeks follow-up, showing significant improvement of the lesions.

When considering MEWDS and other white dot syndromes, other masqueraders should be ruled out, including lymphoma, syphilis, sarcoidosis, tuberculosis, and cancer-associated retinopathy, among others, as many of these infectious and inflammatory systemic conditions can share their features.[6]

Previously reported cases of MEWDS-like and other white dot syndromes have followed infection, while this is the first documented case to the authors' knowledge that describes a MEWDS-like response to the COVID-19 vaccine. This supports the notion that MEWDS may be autoimmune in origin. Further study is needed as more such cases come to light.

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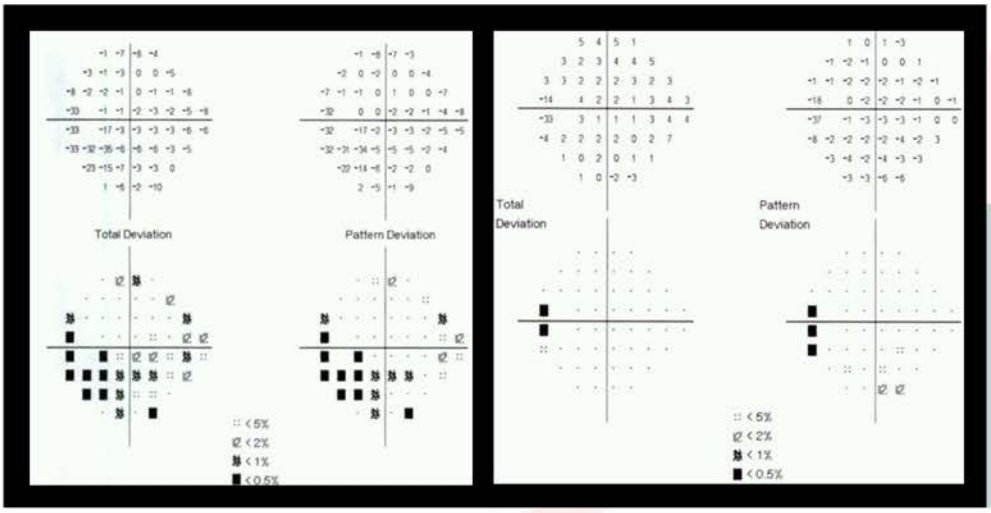

Figure 5 . Humphrey visual field 24-2 of the left eye at presentation (a) with mean deviation -6.23 dB and pattern standard deviation 8.94 dB and (b) nine weeks after presentation with mean deviation +1.04 dB and pattern standard deviation 5.61 dB. Note improvement in scotoma.

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THE RETINA INSTITUTE

2201 Brentwood Blvd.
St. Louis, MO 63144
(314) 367-1181
tri-stl.com

Kevin J. Blinder, MD
Sabin Dang, MD
Alia K. Durrani, MD
Nicholas E. Engelbrecht, MD
M. Gilbert Grand, MD

Daniel P. Joseph, MD, PhD
Thomas K. Krummenacher, MD
Gaurav K. Shah, MD
Bradley T. Smith, MD