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Uveomeningeal syndrome presenting with bilateral optic disc edema and multiple evanescent white dots syndrome (MEWDS)

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ABSTRACT

Purpose: To report a uveomeningeal syndrome with bilateral optic disc edema and a MEWDS-like presentation.
Observations: A 17-year-old female experienced daily fevers for 3 days (ranging from 101.4 F to 102 F), then received the first dose of the Pfizer SARS-CoV-2 vaccine nearly three weeks later. Within two days she experienced severe headaches with severity scale of 8/10. Retinal imaging at the time showed optic disc edema in both eyes (OU) and multifocal well-circumscribed chorioretinal white lesions in the periphery OU. Neuroimaging and routine infectious and inflammatory laboratory testing were normal. Lumbar puncture showed elevated opening pressure and cerebrospinal pleocytosis consistent with an aseptic meningitis. At follow up, one month later the symptoms and retinal findings resolved.
Conclusions: MEWDS is typically an idiopathic condition but can occur in the setting of viral illness. Although other white dot syndromes have been associated with uveomeningeal presentations, to our knowledge this is the first such case to be described in the English language ophthalmic literature.

1. Introduction

Multiple evanescent white dots syndrome (MEWDS) is one of many retinal white dots syndromes which include acute retinal pigment epitheliopathy (ARPE), birdshot chorioretinopathy (BC), acute posterior multifocal placoid pigment epitheliopathy (APMPPE), acute zonal occult outer retinopathy (AZOOR), multifocal choroiditis and panuveitis (MCP), serpiginous choroidopathy (SC), and punctate inner choroidopathy (PIC).[1] There are debates concerning whether these entities are a spectrum of the same disease process, and they are all characterized by the acute onset of white or yellow spots in the peripheral retina in young and otherwise healthy adults.[2] The prognosis of these diseases is generally excellent; however MCP, BC, and SC can result in severe vision loss.[2] MEWDS presents as a wreath-like array of white dots deep to the retina, and the disease process can be localized to the outer retina or the retinal pigment epithelium.[3] Though the etiology is uncertain, a viral prodrome is common.[1]

Diagnostic findings of MEWDS include foveal granularity with small white or orange specks (i.e., multifocal evanescent white dots).[2] Fluorescein angiography shows early hyperfluorescence.[1] Optical coherence tomography (OCT) of the retina commonly shows disturbance of the photoreceptor inner segment and outer segment (IS/OS) junction in the affected macula.[3] MEWDS is a self-limited disease, with almost all patients regaining good visual acuity within 7–10 weeks.[2] Recurrence is rare, and has been anecdotally treated with cyclosporine or intravitreal ranibizumab.[4,5] Although MEWDS can occur after viral prodrome, this is the first case of a MEWDS-like illness with a uveomeningeal syndrome to be reported in the English language ophthalmic literature.

1.1. Case report

A 17-year-old female presented with fever, headache, and visual loss

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OU. Past medical history was significant for migraine. On 3/30/21 she experienced daily fevers for 3 days (ranging from 101.4 F to 102 F). She tested negative for SARS-CoV-2 at that time. After 2 weeks, she received the first dose of the Pfizer SARS-CoV-2 vaccine. Two days later, she experienced the onset of severe headaches (pain scale of 8 out of 10) that were initially intermittent then persistent. She again tested negative for SARS-CoV-2. At a visit to an optometrist nearly three weeks later, her vision was 20/20 in both eyes with correction, extraocular movements were full, and the slit lamp exam was normal. Patient reported no skin rash or other viral prodromal symptoms. Ophthalmoscopy showed bilateral optic disc edema, a peripapillary hemorrhage, and multifocal, well-circumscribed, deep, chorioretinal white lesions in the periphery OU (Fig. 1).

On hospital admission, erythrocyte sedimentation rate was 30 mm/hour (reference: 0–20 mm/hour). Serum herpes simplex virus (HSV) 1/2 IgM was 1.07 IV (reference: <0.89 IV). Pertinent negatives included blood culture, Cryptococcal antibody, Rickettsia typhi antibody, Borrelia burgdorferi antibody, Syphilis antibody, C-Reactive Protein (CRP), Anti-nuclear antibody (ANA), Anti-neutrophil cytoplasmic antibodies (ANCA), Rheumatoid factor (RF), Human immunodeficiency virus (HIV) antibodies, and Neuromyelitis optica (NMO) marker aquaporin 4 immunoglobulin-G (AQP4-IgG). Magnetic resonance imaging (MRI) with contrast of the brain and orbits showed minimal papilledema but was otherwise normal. A lumbar puncture showed elevated opening pressure of 55 cm H_2O (reference: < 20cmH_2O), and elevated cerebrospinal fluid (CSF) white blood cells (WBC) of 48 cells/μL. CSF protein measured 23 mg/dL (reference: 15–45 mg/dL) and CSF glucose was 56 mg/dL (reference: 40–70 mg/dL). A CSF cytomegalovirus (CMV) PCR was positive, but the patient had no clinical evidence for ocular or systemic CMV. The patient was seen by a neurologist while in the hospital, at which time the differential diagnosis included meningitis and idiopathic intracranial hypertension. However, there were no previous fundus exams to aid in determining whether this papilledema was chronic.

Fluorescein angiogram showed severe leakage from the disc in the right eye with, mild leakage from the disc in the left eye, and wreath-like choroidal hyperfluorescence of the posterior pole in both eyes (Fig. 2). OCT showed optic nerve edema OU (Fig. 3).

The patient was prescribed valacyclovir 1000 mg twice per day for 10 days and acetazolamide 750 mg twice per day for 30 days. Follow up exam in clinic about one month after discharge showed visual acuity of 20/20, and resolution of the optic disc edema and peripapillary flame hemorrhage. OCT showed resolution of the optic nerve edema OU (Fig. 4).

2. Discussion

This patient developed a MEWDS-like presentation two weeks after a fever illness and two days after administration of the SARS-CoV-2 vaccine. Most cases of MEWDS present to general eye doctors and retina specialists and not to neuro-ophthalmology. The ophthalmoscopic and fluorescein angiographic features in this case are consistent with MEWDS. Although a uveomeningeal syndrome has been associated with AMPPE, to our knowledge this has not been described previously with MEWDS.[6] It may be, however, that spinal fluid analysis is not obtained routinely for MEWDS and that the true prevalence of aseptic meningitis and uveomeningeal disease may be underestimated.

Uveomeningeal syndrome is typically associated with bacterial, viral, or inflammatory etiologies including tuberculosis, herpes simplex virus (HSV), Vogt-Koyanagi-Harada (VKH) syndrome, or sarcoidosis.[6] This patient did show an elevated HSV 1/2 IgM, suggesting the possibility that this virus may have played a part in the findings including papilledema. However, the patient had no recent rash. Clinicians should be aware of the clinical, OCT, and fluorescein angiographic findings of MEWDS and MEWDS-like presentations. The possibility of the patient's recent SARS-CoV-2 vaccine contributing to the MEWDS presentation cannot be ruled out, as multiple such cases have been reported.[7] Optic disc edema can occur in MEWDS but the presence of bilateral optic disc edema, headache, and fever should prompt evaluation for uveomeningeal syndromes.[2,6] To our knowledge this is the first case of a MEWDS-like presentation with papilledema and an aseptic meningitis to be described in the English language ophthalmic literature.

3. Conclusions

MEWDS is usually idiopathic but can occur in the setting of viral illness. Optic disc edema, headache, and fever should prompt evaluation for uveomeningeal syndromes.

Patient consent

The patient's legal guardian consented to publication of the case in writing.

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Authorship

All authors attest that they meet the current ICMJE criteria for authorship

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Intellectual property

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have followed the regulations of our institutions concerning intellectual

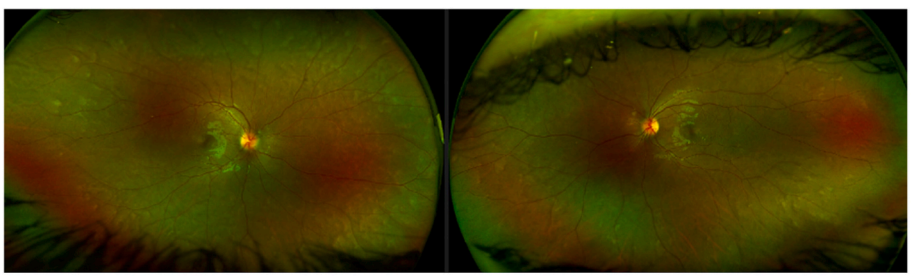

Fig. 1. Fundus photo at initial presentation showing nasal disc swelling in the left eye and diffuse disc edema in the right eye, and well-circumscribed chorioretinal white lesions in both eyes.

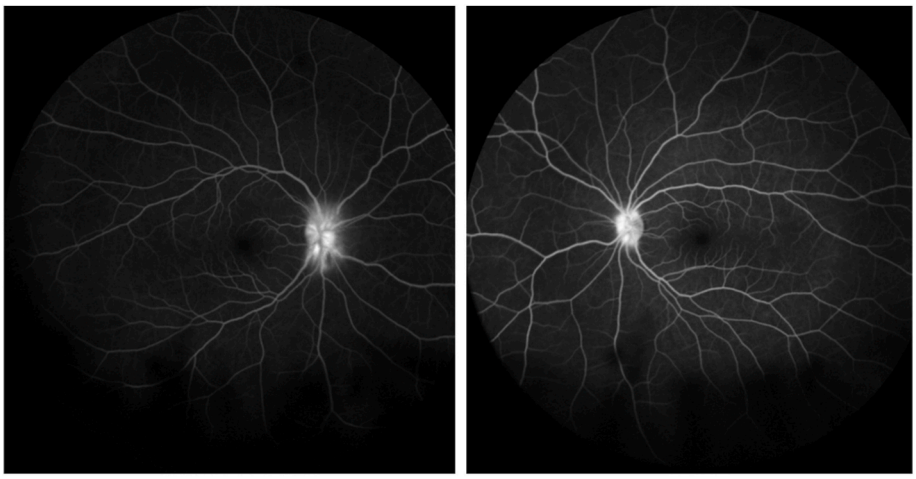

Fig. 2. Fluorescein angiogram showing severe leakage from disc in the right eye and mild leakage from disc in the left eye, and wreath-like choroidal hyperfluorescence of posterior pole in both eyes.

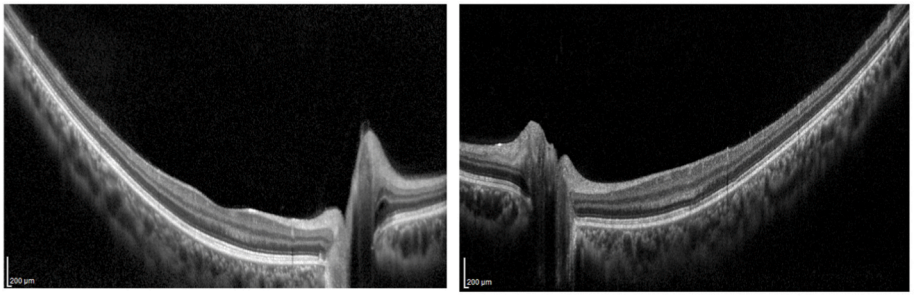

Fig. 3. OCT one week after presentation shows optic disc edema bilaterally.

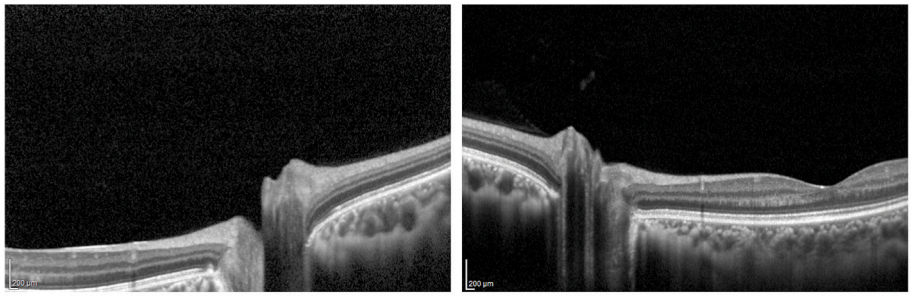

Fig. 4. OCT one month after presentation shows resolution of the bilateral optic disc edema.

property.

Research ethics

We further confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

IRB approval was obtained (required for studies and series of 3 or more cases).

Written consent to publish potentially identifying information, such as details or the case and photographs, was obtained from the patient(s) or their legal guardian(s).

Authorship

The International Committee of Medical Journal Editors (ICMJE) recommends that authorship be based on the following four criteria:

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. Drafting the work or revising it critically for important intellectual content; AND
3. Final approval of the version to be published; AND
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

All listed authors meet the ICMJE criteria.

We attest that all authors contributed significantly to the creation of

this manuscript, each having fulfilled criteria as established by the ICMJE.
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Declaration of competing interest

Zachary C. Wiley, Mohammad Pakravan, Chaow Charoenkijkajorn, Shawn C. Kavoussi, and Andrew G. Lee declare that they have no conflict of interest.

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