SALUS UNIVERSITY
The Eye Institute

Pennsylvania College of Optometry
The Focal Point
August 2022 Edition

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Scholars Class of 2024

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Undergrad: NC State University
Major: Integrative Physiology and Neurobiology
Favorite Subject: Binocular vision
Optometry Goal: Pediatrics
Favorite food: Chicken Afritada (amazing)
Hobby: Singer/songwriter, musician
Last Show I Binged: The Boys

Stephanie Holt
Class of 2004, Pennsylvania College of Optometry

Hometown: Asheville, NC
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Major: Behavioral Science. Human Factors Engineering
Favorite Diagnostic Instrument: OCT
Favorite "Cheat" Food: Buffalo wings
Hobby: Ice Hockey

Some details of the case have been changed to protect patient confidentiality. Though the NBEO PAM-Style format is utilized for the case write-up, there is no affiliation with NBEO.

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The Case

Demographics

37-year-old Caucasian female; veterinary technician

Chief complaint: Constant blurry vision OS > OD

History of present illness

Character/signs/symptoms:

Location: OS > OD

Severity: Mild OD, Severe OS

Nature of onset: "Bad" stomach virus with very high fever in January 2020 (2.5 years prior to this exam) that caused an episode of vision loss OU that she describes as "blurry and gray" upon waking on the 3rd day of the virus. She states her vision was "completely normal" prior to that.

Duration: "Legally blind" for 6 months after onset, then vision gradually started improving

Frequency: Constant

Exacerbations/remissions: Gradually improved OD > OS over the past 2 years

Relationship to activity or function: Unknown, patient worked with horses and states that she was not told her vision loss was associated with toxoplasmosis, histoplasmosis, or zoonotic virus

Accompanying signs/symptoms: (-) eye pain, redness, headache, flashes, floaters, diplopia, eye strain

Other pertinent information from records request: Patient was seen at Bascom Palmer Eye Institute Emergency Room at initial presentation for "blurry vision for 5 days". At that visit, her uncorrected DVA was 20/200 OD and 20/400 OS. DFE revealed faint foveal mottling OU and large cream colored circular lesions along the superior arcade OS with no AC cells, no vitritis, no hemes, no sheathing. OCT showed focal areas of parafoveal outer retinal loss OU. FAF showed granular appearing hypoautofluorescence corresponding to lesions. FA/ICG was unremarkable. Diagnosis at that visit was *"suspect acute macular neuroretinitis (AMN) given loss of vision coinciding with post viral illness and focal areas of outer retinal disruption; Differential Diagnosis includes MEWDS (but with bilateral vision loss), APMPPE, birdshot, PIC (punctate inner choroidopathy), VKH (early)"*

Labs: HIV, RPR, FTA, ACE and PPD were normal/non-reactive.

Patient states she was on oral birth control (norethindrone-ethinyl estradiol) at that visit and was instructed to discontinue use. Patient states she has had no medical or surgical treatment for her diagnosis of AMN.

The Case

Patient ocular history
(+) acute macular neuroretinitis (AMN) OU
(-) glaucoma, eye injury, surgery, or spec Rx

Family ocular history
Unremarkable

Patient medical history
(+) hypothyroid
(-) hypertension, diabetes

Medications taken by patient
Clonidine HCl 0.3 mg, 2 tablets at night (for sleeping)

Patient allergy history
NKA, NKDA

Family medical history
Unremarkable

Review of systems
Constitutional/general health: denies
Cardiovascular: denies
Pulmonary: denies
Gastrointestinal: denies
Genitourinary: denies
Musculoskeletal: denies
Neurologic: denies
Immunologic: denies
Hematologic: denies

Mental status
Orientation: oriented to person, place, and time
Mood/Affect: normal

Clinical findings

BVA:	Distance	Near
OD:	20/25, PH NI	0.4/0.6M
OS:	20/150, PH NI	0.4/2.5M

Pupils: PERRL OU-) APD
EOMs: Full with no restrictions OU
Confrontation fields: Full to finger counting OD; FA blurry, PFC full OS
Amsler Grid: "Diffuse, isolated, blurry spots around central black dot" OU

The Case

Color Vision: 14/14 OD, 13/14 OS
Hirschberg: Symmetric

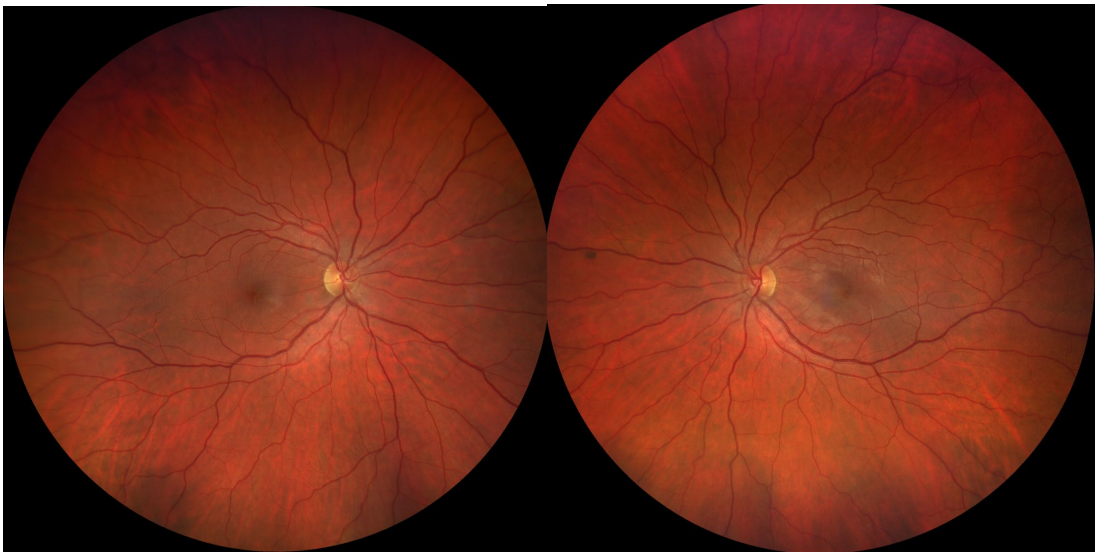
Subjective refraction:	VA Distance	VA Near
OD: Plano	20/25	0.4/0.6M
OS:-0.25 sph	20/150	0.4/2.5M

Slit lamp:
lids/lashes/adnexa: unremarkable
conjunctiva: unremarkable
cornea: unremarkable
anterior chamber: unremarkable
iris: unremarkable
lens: unremarkable
vitreous: clear
IOPs/method: 15/15 mmHg GAT

Fundus OD:
C/D: 0.25/0.25, distinct margins, no edema, overall well-perfused with question of small area of temporal pallor
macula: flat and intact, no hemorrhages, exudates, pigmentary changes, or no macular edema
posterior pole: unremarkable
periphery: flat x 360, no RD, no breaks
Fundus OS:
C/D: 0.3/0.3 distinct margins, no edema, overall well-perfused with question of small area of temporal pallor
macula: flat and intact, no hemorrhages, exudates, pigmentary changes, or no macular edema
posterior pole: unremarkable
periphery: .3x.4DD nevus SN midperiphery
Blood pressure:
128/78mmHg

Case Images:

The Case



Case Management Summary

Acute macular neuroretinitis (AMN) OU, diagnosed at Bascom Palmer Eye Institute previously with BCVA 20/25 OD and 20/150 OS at today's exam. Improved OD>OS compared to presentation based on requested records. Patient was told the cause of her vision loss was likely associated with an ischemic event secondary to an unknown stomach virus with very high fever. Recommend eye protection (spectacle Rx with polycarb lenses or safety glasses). Patient is currently being monitored by Mid Atlantic Retina/Will's Eye Hospital. Continue monitoring with Mid Atlantic Retina. Discussed low vision referral and consideration of occupational therapy evaluation; patient is currently a veterinary technician and has difficulty viewing cytology slides through microscope.

Case Pearls

Acute Macular Neuroretinitis: Per Dr. Rob Carroll, Philadelphia Retina Associates, AMN ends up in the "weird stuff" bucket for retinal and inflammatory disease. The general thought is that there is some sort of vascular insult primarily affecting the

outer retina, and the insult may occur at the level of the deep retinal capillary plexus and/or the choriocapillaris. Things like hypo/hypertension, extreme illness, use of vasopressors, oral contraceptive use, viral infection, and others have been associated with AMN. AMN in the acute phases has a classic clinical appearance of multiple, brown/red, teardrop-shaped lesions surrounding the fovea. The imaging "signatures" in the acute phase tends to be hypointensity on the near infrared and hyperreflectivity in the outer retina (usually the ONL) on OCT, in areas corresponding to these lesions. In the later phases, the clinical exam findings can fade but the OCT typically is left with loss or "collapse" of some of the outer retinal layers and a granularity to the photoreceptors where the lesions were. Oral steroids, if infectious causes are ruled out, may or may not help. Patients usually have bad-ish vision at first and then it generally tends to improve to decent (20/50 or better) MOST of the time, with some residual scotoma that may never heal. It is a frustrating disease that we don't know a ton about. Differential diagnoses include various white dot syndromes including APMPPE, MEWDS, Birdshot, PIC and VKH.

Oral Contraceptives: In this case, the patient's oral contraceptives were discontinued, likely to minimize any worsening or chance of recurrence (if her AMN was due to a vascular problem induced by oral contraceptives). Progesterone-only based oral contraceptives are not thrombophilic and might be considered for patients with AMN in consultation with their gynecologist.

Viral Etiologies: Documentation from Bascom Palmer suggests the etiology of our patient's AMN was caused by an unspecified "stomach" virus. There are many documented cases of AMN associated with COVID infection, as well as after getting the COVID vaccine. This begs the question: are the two related because of something inflammatory, something vascular, or something infectious (or all of the above) that the virus may be doing to the body and secondarily to the eye?

We will likely never know the actual viral etiology of our patient's diagnosis of AMN, however we wanted to share some things we learned from this case.