SALUS UNIVERSITY
The Eye Institute

Pennsylvania College of Optometry
The Focal Point
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Gini Beltran

Traditional Class of 2024

Hometown: Union, New Jersey
Undergrad: New Jersey Institute of Technology
Major: Biology
Favorite Subject: Posterior Segment Disease
Optometry Goal: To provide exceptional care to all of my patients
Favorite food: Sushi
Hobby: playing BINGO online (I can't believe I'm admitting this)
Last Show I binged: The Vampire Diaries

Bhawan Minhas

Class of 2013, Illinois College of Optometry

Hometown: Calgary, Alberta Canada
Undergrad: University of Calgary
Major: Biological Sciences; Minor Primatology
Favorite Animal: squirrel monkey
Unusual Skills: pristine extraocular muscle control
Hobby: Thru-hiking the Superior Hiking Trail near Duluth Minnesota; as of current standing, I've hiked a combined 100 miles over the course of three trips on the SHT!

You'd Better Watch Out! A Case of Neovascularization Developing Four Years After Initial Retinal Vascular Event

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.

Demographics

58 yo Black Female

Chief complaint: comprehensive eye exam OU with complaints of sharp ocular pain which she perceives to arise from the back of her left eye. The patient states that she experiences this pain once every 2 weeks and has occurred x 10 months

History of present illness

Character/signs/symptoms: Ocular pain
Location: left eye
Severity: moderate
Nature of onset: onset 10 months ago
Duration: few minutes
Frequency: every 2 weeks
Exacerbations/remissions: occurs randomly
Relationship to activity or function: none
Accompanying signs/symptoms: none

Patient ocular history

-Conjunctival papilloma LLL
-Collateral optic nerve vessels OS with Presumed hx of CRVO OS; unremarkable MRI and carotid ultrasound at that time
-Dry Eye Disease OU
-Thyroid Eye Disease OU

Family ocular history

mother: None
Father: None

Patient medical history

Hypertension, hyperlipidemia, osteoarthritis of knees, anxiety/depression, hx of total thyroidectomy

Medications taken by patient

Albuterol sulfate solution for nebulization
Buspirone tablet
Chlorthalidone tablet
Vitamin D3 and Vitamin D2
Diclofenac sodium tablet
Levothyroxine capsule
Losartan tablet
Pantoprazole tablet
Pravastatin tablet
Setralineoral concentrate
Trazodone tablet

Patient allergy history

Moxifloxacin (hives)

Family medical history

Mother: Thyroid disorder

Father: unremarkable

Review of systems

Constitutional/general health: denies
Ear/nose/throat: Cardiovascular: denies
Pulmonary: Endocrine: denies
Dermatological: denies
Gastrointestinal: denies
Genitourinary: denies
Musculoskeletal: denies
Neurologic: denies
Psychiatric: denies
Immunologic: denies
Hematologic: denies

Mental status

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

Clinical findings

BVA:

	Distance	Near
OD:	20/20-2	0.4/0.4
OS:	20/20 -2	0.4/0.4

Pupils: equal, round, reactive, no APD OU
EOMs: full with no restrictions OU
Confrontation fields: full to finger counting OU
Hirschberg: Symmetric

Subjective refraction:

	VA Distance	VA Near
OD: +1.00 -0.50 x 095	20/20-1	0.4/0.4
OS: +1.00 -0.75 x 081	20/20	0.4/0.4

Slit lamp:

Lids/lashes/adnexa: unremarkable OD; 1.2x1mm lobulated mass with vascularization inf temp lid at conjunctival junction OS
Conjunctiva: pinguecula nasal OU and inferior concretions OU
Cornea: arcus 360 OU
Anterior chamber: deep and quiet OU
Iris: flat and intact OU
Lens: trace nuclear sclerosis OU
Vitreous: unremarkable OU

IOP: OD: 14 **OS:** 14 **Method:** Goldmann

Fundus OD:

C/D: 0.3/0.3
Macula: macula flat and intact
Posterior pole: clear
Vasculature: normal vessels; AV ratio: 2/3
Periphery: flat and intact 360 (-) breaks or RDs

Fundus OS:

C/D: 0.3/0.3 with optic nerve collaterals
Macula: macula flat and intact (-) CME
Posterior pole: clear
Vasculature: vessel tortuosity with temporal vessel sheathing
Periphery: flat and intact 360 (-) breaks or RDs, retina ischemia/sclerosis with hemes/roth spots vs. neovascularization

Blood pressure: 160/78 mmHg RAS

Case Images:

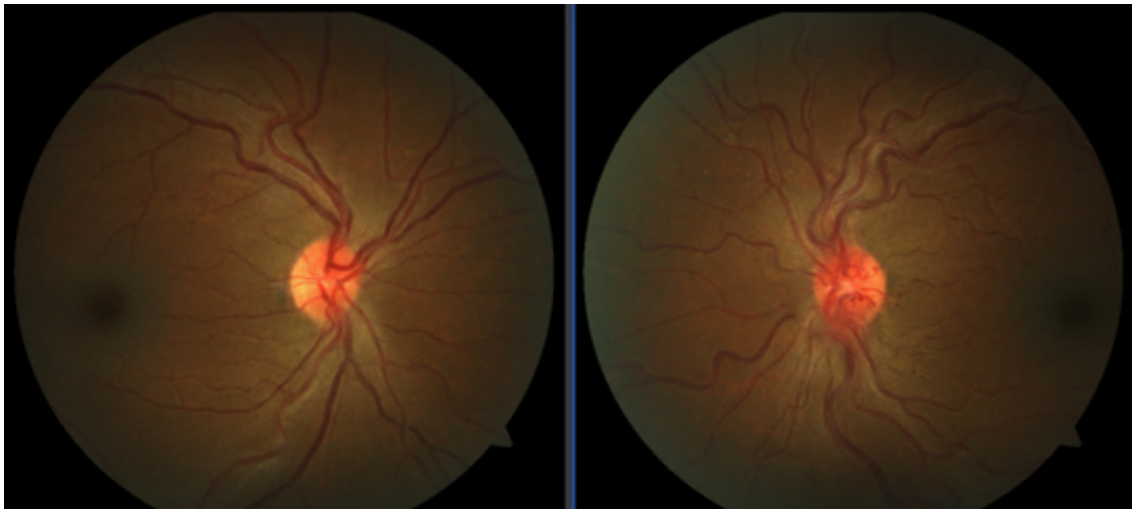

Image 1: Colored fundus photos of the right and left eye, respectively with collateral vessels noted on the ONH OS as noted at initial exam 4 years ago.

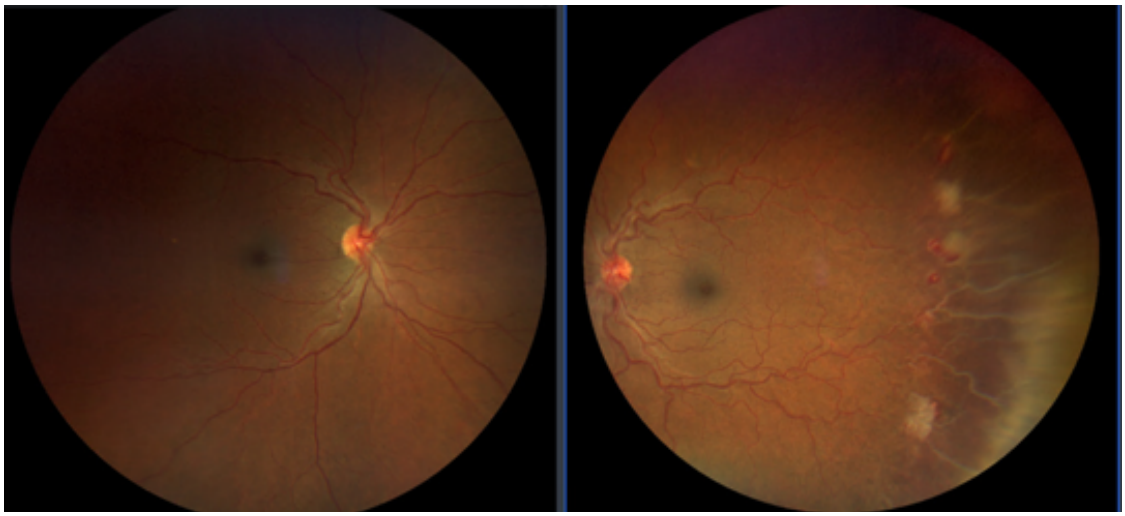

Image 2: Colored fundus photos of the right and left eye, respectively showing peripheral ischemia with vascular changes temporal in the left eye at today's examination.

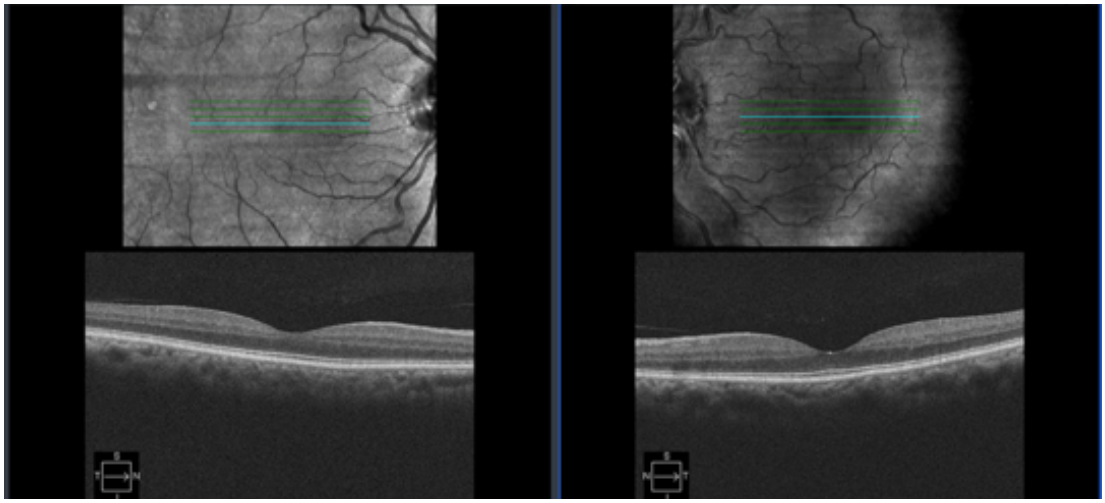

Image 3: 5-Line Raster OCT of the right and left eye, respectively demonstrating unremarkable maculae OU allowing to rule out cystic macular edema OS specifically.

Case Management Summary

The patient had a longstanding history of presumed uncomplicated non-ischemic CRVO in the left eye given a history of findings of optic nerve collateral vessels with unremarkable MRI/carotid ultrasound and no indication of optic nerve sheath meningioma or carotid congestion. Upon examination her left eye revealed temporal retinal ischemia with extensive vessel sclerosis and bordering retinal neovascularization on the perfused/non-perfused retinal border that had not previously been noted. The patient was referred to Philadelphia Retinal Associates for further treatment and evaluation and was promptly treated with peripheral photocoagulation therapy in the left eye. Anti-VEGF treatment was not deemed necessary at

that time. The patient is followed every three months with the caveat that anti-VEGF injection may be utilized in the future if signs of proliferation reappear.

Case Pearls

Non-Ischemic CRVO: This case was particularly interesting to observe the possible progression of disease in non-ischemic CRVO. As discussed with the retina specialist at Philadelphia Eye Associates, most subsequent complications of CRVOs usually occur within a few months to a year after initial insult. Although our patient's presentation of neovascularization of the retina was atypical due to the length of time passed between the initial diagnosis and the neovascularization findings (4 years later), her clinical presentation was consistent with that of a central retinal vein occlusion. This patient also presented with optic disc collateral vessels along with tortuosity and dilation of all branches of the central retinal vein, which are common clinical sequelae in CRVOs. However, due to the lack of other retinal findings, it is important in these cases to rule out carotid vascular disease or a compressive lesion of the optic nerve sheath. Additionally, close monitoring for sequelae - even long term - is critical to catch early treatable retinopathy.

Differential Diagnosis of Retinal Neovascularization: When seeing neovascularization of the peripheral retina, we have to think of all the possible conditions that could cause this manifestation. There is a broad differential diagnosis list; naming a few: proliferative diabetic retinopathy, retinopathy of prematurity, sickle cell retinopathy, retinal artery/vein occlusions, hyperviscosity syndromes, sarcoidosis, inflammatory diseases with retinal vasculitis, and pars planitis, among others. The patient's diagnosis was determined following a detailed work-up, including neuro-imaging, paired with her other presenting clinical findings over the span of many years. Management of these cases is on-going and astute clinicians should not wash their hands of a peculiar ocular finding despite unremarkable initial work-up.