

CASE STUDY

A healthy 23 year-old caucasian male was referred by Dr. Barry Kowalik in early December of 2020. Doctor Kowalik had called concerned about a patient who had contacted him while the patient was actively infected with the novel Coronavirus (COVID-19). The patient had relayed to Dr. Kowalik that 2-3 days after exhibiting symptoms consisted with COVID-19 and receiving a positive COVID-19 antibody test, he developed a “missing area” in his left inferior visual field. The patient had no photopsias or progression of the visual field defect after the initial onset. He had no acute severe events such as hypotension or hypoxia associated with the illness. Two days after the visual field defect onset, the patient lost both his sense of taste and smell.

After discussing the patient with Dr. Kowalik and determining that the visual filed loss was static and likely not threatening his central visual acuity, we elected to see the patient after he had recovered from his illness and no longer presented a risk for infecting other patients or staff in the clinic.



Image 1 - OS color fundus

The patient presented to RAK 3-weeks after the onset of his visual field loss with 20/20 vision in both eyes. On confrontational visual field testing, he identified the area of missing vision in the inferonasal quadrant of his left eye field. His tonometry and anterior segment examinations were normal. There were no signs of inflammation in either eye. On initial funduscopic exam, both eyes appeared fairly normal (image 1, OS color fundus photo). OCT of the macula did show subtle thinning of the retina in the ST area (image 2, OS macular OCT). OCT angiography of the macula was normal with no flow voids on any of the slab images. OCT nerve fiber analysis showed a definite nerve fiber layer defect in the ST area corresponding to the perceived visual field defect (image 3, OS OCT RNFL).

A presumptive diagnosis of a sectoral optic neuropathy (likely ischemic) secondary to COVID-19 infection was made. No therapy was instituted and the patient was followed. He returned 3 weeks later for follow-up and felt that subjectively his visual field defect was improving (although still present). Formal visual field testing (Humphrey visual field 30-2) revealed mild depression in the inferior hemifield but no significant defects. His OCT RNFL showed a persistent RNFL defect as had been seen on presentation.

To date, this is the first reported case of an optic neuropathy associated with the novel coronavirus in a healthy, noncritically ill human. The only other case report of COVID-19 related optic neuropathy was in a Wuhan patient who was hospitalized with bilateral pneumonia. This patient also developed peripheral vasculitis (1). Animals have been found to develop optic neuropathy associated with coronavirus (2).

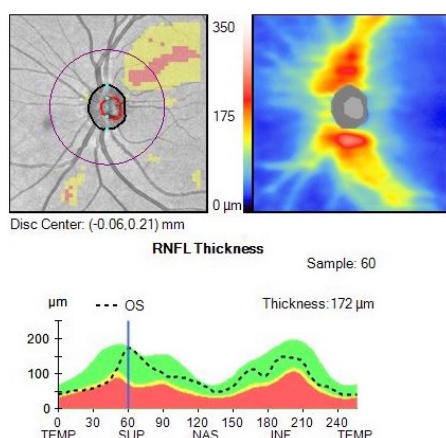


Image 2 - OS macular OCT

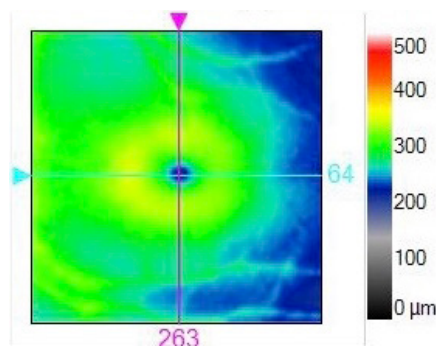


Image 3 - OS OCT RNFL

In the setting of an active COVID infection, when should a patient be referred for an urgent or semi-urgent condition?

This is a critical question that really depends on the severity of the COVID-19 infection of the patient and the likely risk to the patient of permanent vision loss if their ocular condition is not treated immediately. In many instances this is a balancing act that must take place over a telephone call or via telemedicine. If a patient is critically ill or struggling with oxygenation or other aspects of the COVID infection, then they are unlikely to be good surgical candidates (in the case of a retinal detachment for example). However, if a patient with mild symptoms of COVID and a significant vision threatening event (RD or retinal tear), then urgent evaluation is warranted. Typically this evaluation will take place outside of the clinic environment that is not equipped to handle patients with active COVID infection. Because the emergency room is equipped to handle both ocular emergencies and COVID patients, this is the best place to evaluate patients in this scenario. We have the ability to perform retinal lasers and intravitreal injections in this environment. We also have the ability to take the patient to the operating room from the ER in the case of a retinal detachment or endophthalmitis requiring more invasive therapy.

In the event of a condition that is less urgent, it is best to follow the CDC guidelines regarding returning to work after a COVID infection. These guidelines include at least 10 days since symptoms first appeared and at least 24 hours with no fever without fever-reducing medication and other symptoms of COVID-19 are improving with the exception of the loss of taste and smell may persist for weeks or months after recovery and need not delay the end of isolation (3).

If there is a question regarding the urgency of the referral and the proper location to refer

the patient, it is best to call RAK and discuss the patient with the retina doctor. They can then help arrange the best and safest place to send the patient in a timely fashion for their care.

How do you know this case is due to the COVID-19 infection?

There is no way to know for certain the exact cause of this patient's RNFL loss. It is very likely due to the patient's COVID infection due to the timing of onset (2 days after the onset of symptoms) and the previous reports of coronavirus infection-related optic neuropathy in both human and animals (1,2). As other cranial nerves seem to be involved in COVID such as the ones conveying the sense of taste and smell, it makes sense that the optic nerve can also be involved. This case may hold insights into how those other neurological defects occur. Unlike the previous case report which involved a critically ill patient, our patient was young and healthy and not severely effected by COVID. This reduces the potential for the patient to have developed the optic neuropathy secondary to low blood pressure or hypoxia.

Why didn't you evaluate this patient with neuroimaging or with fundus angiography?

We certainly considered both of these diagnostic tests. Due to the fact that the patient had a sudden onset of the visual field defect, it was felt that a compressive lesion was unlikely the cause of the RNFL loss which would most likely be a more gradual loss. In addition, the patient did not demonstrate any signs of CNS vasculitis or encephalopathy which would warrant neuroimaging.

As for fundus angiography, the patient's normal exam and the isolated defect in the nerve fiber layer made angiography unlikely to be beneficial for understanding or managing the patient's condition. Although angiography is very safe for patients, it is critical to judiciously utilize testing and perform only the necessary diagnostic tests to manage and treat patients.

What forms of therapy exist for a patient like this?

Considering that this patient is very unique, we can only extrapolate from other similar conditions. With no active intraocular inflammation, anti-inflammatory medications are unlikely to benefit the patient. Given the very interesting fact that the RNFL loss was already in place, there really are no good options for reversing this loss.

Will this patient get better or worse? Will this happen again to this patient?

It is unlikely that this patient will have a recurrence or worsening of his condition as he has recovered from the COVID-19 infection. It is possible that he may have less of a visual field defect as time goes by, something that he already had noted during his followup examination. Whether this is due to some form of adaptation to his field defect or some actual neural remapping of his visual processing is debatable and well beyond the scope of this report.



Submitted by
John W. Kitchens, MD

References

1. Julie François, MD1; Axelle Semler Coltery, MD1; George Hayek, MD1; et al. Coronavirus Disease 2019–Associated Ocular Neuropathy With Panuveitis A Case Report. JAMA Ophthalmol. Published online December 17, 2020. doi:10.1001/jamaophthalmol.2020.5695
2. Seah I, Agrawal R. Can the coronavirus disease 2019 (COVID-19) affect the eyes? a review of coronaviruses and ocular implications in humans and animals. Ocul Immunol Inflamm. 2020;28(3):391-395. doi:10.1080/09273948.2020.1738501
3. <https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/isolation.html>

New Office Location in London





A LOOK BACK AT 2020

Wow, what an unexpected year we had in 2020!

When COVID-19 struck we were 10 physicians strong spread across 13 locations. Out of an abundance of caution our Senior physicians worked remotely taking us down to just 6 physicians during the initial phase of the COVID-19 shutdown. Our Team of 6: Drs. Thomas Stone, John Kitchens, Todd Purkiss, Belinda Shirkey, Blake Isernhagen, and Miguel Busquets continued seeing essential patients to provide vision-preserving treatments. Together, we created a maximally safe environment for our staff and patients implementing additional precautions and protocols.



With fewer physicians we had to temporarily close some of our locations and modify frequency in others during the main COVID-19 shutdown. Having already committed to a new office space in Jeffersonville, Indiana, we moved forward with this opening in May. Opening a new office during a pandemic isn't ideal but we feel grateful to have been welcomed by the community of providers nonetheless and look forward to the potential this site holds.

Left: Jeffersonville, Indiana Office



we were able to take our Administrative offices in Lexington on the fourth floor and turn it into a 1-doctor clinic to help decompress the volume in our 5th floor clinic.

We closed out the year by having to relocate our London satellite to an interim office on 4th Street. Those of you who are local may know, the medical office building we were in formerly on 5th Street had operational changes and all tenants had to relocate. We are so grateful to have had little disruption during this transition.

Forecast 2021

We at Retina Associates are excited for the New Year! A COVID-19 vaccine approved and in route gives us all a hopeful start. Many of our providers and staff are scheduled for receiving the vaccine in the month of January. This paired with our continued efforts to safeguarding your patients brings light to the situation.

Drs. Stone, Purkiss and team continue growing in our new Jeffersonville office with weekly frequency. Having our own office allows us room for growth based on volume. We appreciate our colleagues in Southern Indiana who have welcomed us to the area and look forward to collaborating with each of you.

Our Louisville office has seen steady growth and we can anticipate a move to accommodate the volume by Spring/Summer 2021.

Increased volume in our Eastern and Southern offices will bring us closer to making decisions about how we move forward to best accommodate the volume.

We are most excited to announce a new retinal specialist joining Retina Associates this summer, Dr. Aaron Ricca. A formal announcement to follow in the coming weeks.

The physicians and staff at Retina Associates would like to thank you for trusting us with your retinal patients and wish you a happy and healthy 2021!



Thankfully, we were able to get back to a somewhat normal consistency by late Summer, with Drs. Rick Isernhagen and Jack Hollins returning to see patients. It was then that our Founder, Dr. William Wood announced his retirement after over 40 years.

As a practice we had to strategically look at what was feasible, with fewer physicians and with all the risk factors to consider during a pandemic we made the tough decision to permanently close our Shelbyville satellite and our Low Vision services in Lexington.

We know how important it is to you and our patients to have continuity of care and appreciate your understanding that we haven't been able to guarantee a specific physician (or location) to accommodate a

patient's visit. During this time, all of our physicians are traveling to various of our satellites to keep our frequency as consistent as possible. You may recall that Dr. Garcia, our former Ashland doctor resigned back in the Spring. Drs. Blake Isernhagen and Miguel Busquets remain the primary surgeons here, but are joined in clinic by other of our physicians during this time to keep full-time frequency in this office.

As we continue recruiting for a full-time physician, we are grateful to have Dr. Nathan Steinle join us on a part-time basis seeing patients in various locations. Dr. Steinle trained at UK and is happy to be back in the Bluegrass seeing patients.



Just like you, we've been creative with how we are able to see close to the same number of patients while still following social distancing guidelines. So, with many of our non-direct patient care staff members working remotely

CORONAVIRUS (COVID-19)

Precautions for Safeguarding Our Patients

- We are taking patients' temperatures at point of entry, and physicians & staff at the start of their shift.
- We ask that patients wear a protective mask (surgical or cloth) to their appointment and likewise all RAK physicians and staff will have masks on and other protective gear, as necessary. Protective masks should be worn properly covering nose and mouth to help minimize exposure.
- We ask patients to arrive 15 minutes before their appointment time to help us follow social distancing guidelines. If patients arrive earlier than 15 minutes, they will be asked to wait in their car until closer to the appointment.
- A Retina Associates representative will greet patients with a risk survey regarding

COVID-19 symptoms, recent travel and will be checking patients' temperature.

- During this time, we have restricted entry to patients only. If patients require assistance, they should call our office (800) 627-2020 prior to their appointment to discuss their needs.
- As we resume care for our established patients, there will be increased demand for appointments. As we follow the social distancing guidelines we have fewer patient appointment openings. **During this time, we are unable to guarantee patient appointments with a specific doctor in our office.** We may change the time, date, location or doctor to accommodate appointments during this time.
- If patients are on a treatment plan, we ask that they keep their appointment, as many

of our patients need this treatment to preserve vision. We have and will continue following state and CDC Guidelines for their safety.

- Patients will receive an email or text message with a link to pre-register in the comfort of their own home, using their own device through our self check-in process (Phreesia).
- A Retina Associates representative will call all patients the day before their appointment with a risk survey regarding COVID-19 symptoms and recent travel.
- Patients will be asked to reschedule an appointment if they or a household member have been diagnosed with COVID-19, have a fever, have traveled internationally or on a cruise, or have had any other COVID-19 symptoms.



Happy
New
Year!

from your friends at
Retina Associates of Kentucky

RESEARCH

If you are interested in information regarding past clinical trials or participation criteria in our current clinical trials, please contact our research department:

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Richmond
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Indiana
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OUR PHYSICIANS

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Thomas W. Stone, MD
John W. Kitchens, MD
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Belinda L. Shirkey, MD
Blake A. Isernhagen, MD
Jack L. Hollins, MD
Miguel A. Busquets, MD, FACS

