



## The Dangers of Telemedicine for Glaucoma in the Light of COVID-19 Without Being Able to Assess Disease Parameters

**Samar Elnahas and Alastair Lockwood\***

*Department of Ophthalmology, Portsmouth Hospitals University NHS Trust, United Kingdom*

**\*Corresponding Author:** Alastair Lockwood, Portsmouth Hospitals University NHS Trust, United Kingdom.

**Received:** February 26, 2021

**Published:** April 08, 2021

© All rights are reserved by **Samar Elnahas and Alastair Lockwood.**

### Abstract

Both screening and monitoring for glaucoma in patients have been severely hampered by COVID-19. In some areas of medicine virtual consultations using telephone or video have helped in triaging, diagnosing and treating conditions without the need for face-to-face clinics, thus reducing the risk of COVID-19 exposure and transmission. Their use has risen dramatically since the onset of the pandemic. However, glaucoma is usually asymptomatic until being very advanced. We present a case of severe irreversible vision loss from glaucoma not known to be out of control in a patient over a period of 4 months who had received 3 virtual consultations. We caution against the use of virtual consultations without being able to measure glaucoma disease parameters such as intraocular pressure.

**Keywords:** Glaucoma Telephone Telemedicine; Blindness; COVID-19

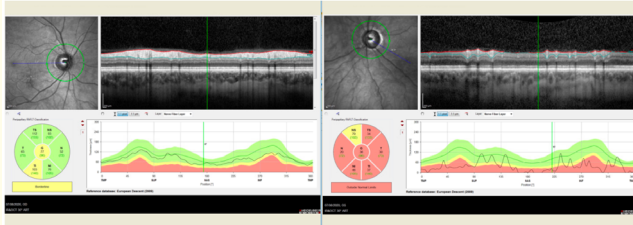
### Abbreviations

IOP: Intraocular Pressure; OD: Once Per Day; BD: Twice Per Day; HVF 24-2: Humphrey 24-2 Visual Field; OCT: Optical Coherence Tomography

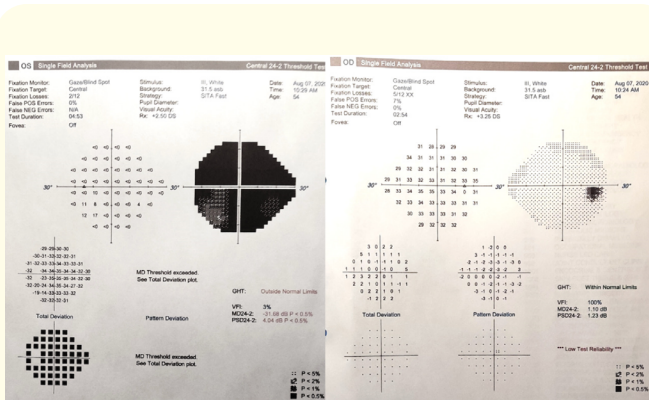
### Case Report

A 54-year-old female with inflammatory eye disease was being treated with long term topical and oral steroids. She had been diagnosed with idiopathic uveo-scleritis 2 years previously, and glaucoma. Her treatment was topical dexamethasone 0.1% and oral prednisolone 13 mg once per day (OD) for the inflammation and topical dorzolamide-timolol combination twice per day (BD), together with latanoprost (OD) at night for lowering of intraocular pressure (IOP).

With the advent of COVID pandemic lockdown in March 2020 her visits to the hospital were interrupted. Instead, she was requested to attend virtual telephone consultations. These occurred with different ophthalmologists on 3 separate occasions. In June 2020 she noticed her vision deteriorating markedly and self-presented to the clinic at the beginning of July 2020 where she was found to have a best corrected visual acuity of Hand Movements only, an IOP of 55 mm Hg and advanced glaucomatous optic neuropathy in her left eye. Her static perimetry Humphrey 24-2 visual field (HVF 24-2) and retinal nerve fibre layer optical coherence tomography (OCT) are illustrated in figure 1 and 2. Despite further treatment with oral acetazolamide her visual acuity in the left eye has remained at 4/60.



**Figure 1:** Retinal nerve fibre layer OCT for both eyes of our patient.



**Figure 2:** Humphrey visual field 24-2 static perimetry for both eyes of our patient.

**Discussion**

Glaucoma is the leading cause of irreversible blindness worldwide, estimated to affect > 60 million people [1]. The disease is insidious, usually being asymptomatic early in the disease course and losing vision when advanced [2]. Detection is still frequently through an incidental visit to the optometrist, although there is evidence for a more stringent screening programme [3]. The accuracy of detection and diagnosis increases with the number of parameters intraocular pressure, visual field and optic nerve head appearance measured, and in particular if there is suggestion of glaucoma in each of the parameters [4].

With the COVID-19 pandemic there has been impact on the treatment and monitoring of all chronic disease. Telemedicine with remote clinic consultation has become more popular because of the reduced risk of COVID exposure for patients and found to be a viable alternative to face-to-face clinic consultations for certain cancer conditions [5].

In ophthalmology there has also been a drive to minimise risk of COVID-19 transmission. The standard eye examination using a slit lamp biomicroscope entails close contact between the patient and ophthalmologist. Clinics prior to COVID-19 were frequently overcrowded with a dense population of people of the older age group, mixing between different families in society and from different parts of the country. New protocol pathways to minimise risk of exposure to COVID-19 have been developed for the treatment of macular degeneration, which can be assisted by the patient monitoring their vision [6].

With glaucoma the regular visits to the optometrist and eye clinics have also been interrupted. Unfortunately, the glaucoma patient is most likely not going to know if their glaucoma is out of control, nor is the ophthalmologist on the end of the phone if there are no parameters such as intraocular pressure, visual field or optic nerve appearance measured, as illustrated by our case. Indeed, the telephone call may give false reassurance to the patient, believing that they are being cared for effectively.

For example, a transcript of the conversation between the ophthalmologist and a fictitious patient Mr Jones might go as follows:

“Hello Mr Jones how are you etc? Can you tell me your eye pressure?... No?...

... Why not? .....You don’t have an eye pressure measuring machine?....

Ok, well Mr Jones how about your field of vision? ...What? No machine?...

But you think you can see things out of the corner of your eye? ...

OK, I don’t suppose you know how your nerves look compared to the last time you came to see me? ...

What? I'm making you nervous, I'm sorry Mr Jones, probably better that than making you feel like you've had a clinical examination and that your eye pressure was under control!"

However, a virtual clinic that is able to measure any, and ideally all parameters, is useful [7]. These allow patients to be monitored in a safer environment. Patients whose glaucoma is out of control can then be detected and brought into a face-to-face clinic.

### Conclusion

In conclusion, the use of telemedicine may be useful for glaucoma but only if disease parameters such as IOP, disc imaging, and field tests can take place. We caution against the use of virtual consultations without this ability.

### Conflict of Interest

The authors declare no conflict of interest.

### Bibliography

1. Tham YC., *et al.* "Global prevalence of glaucoma and projections of glaucoma burden through 2040: a systematic review and meta-analysis". *Ophthalmology* 121.11 (2014): 2081-2090.
2. Stein JD., *et al.* "Glaucoma in Adults-Screening, Diagnosis, and Management: A Review". *The Journal of the American Medical Association* 325.2 (2021): 164-174.
3. Burr JM., *et al.* "The clinical effectiveness and cost-effectiveness of screening for open angle glaucoma: a systematic review and economic evaluation". *Health Technol Assess* 11 (2007): 1-190.
4. Lockwood AJ., *et al.* "Optometrists referrals for glaucoma assessment: a prospective survey of clinical data and outcomes". 24.9 (2010): 1515-1519.
5. Korobelnik JF., *et al.* "Anti-VEGF intravitreal injections in the era of COVID-19: responding to different levels of epidemic pressure". *Graefe's Archive for Clinical and Experimental Ophthalmology* 259.3 (2021): 567-574.
6. Hasson SP., *et al.* "Rapid Implementation of Telemedicine During the COVID-19 Pandemic: Perspectives and Preferences of Patients with Cancer". *Oncologist* (2021): 16.
7. Jayaram H., *et al.* "The COVID-19 pandemic will redefine the future delivery of glaucoma care". *Eye* 34.7 (2020): 1203-1205.

### Assets from publication with us

- Prompt Acknowledgement after receiving the article
- Thorough Double blinded peer review
- Rapid Publication
- Issue of Publication Certificate
- High visibility of your Published work

Website: [www.actascientific.com/](http://www.actascientific.com/)

Submit Article: [www.actascientific.com/submission.php](http://www.actascientific.com/submission.php)

Email us: [editor@actascientific.com](mailto:editor@actascientific.com)

Contact us: +91 9182824667