University Hospitals Coventry and Warwickshire NHS Trust

A Case of Non Arteritic Anterior Ischaemic Optic Neuropathy Following SARS – COV-2 Infection

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Introduction

- We are seeing more ocular manifestations of SARS-COV-2 which has taken centre stage in the medical world since March 2020.
- Dry eyes, epiphora and chemosis are some of the common manifestation of SARS-COV-2 but there are emerging reports of other pathologies including optic neuritis, neuro myelitis spectrum disorders and cranial nerve palsies(1)

Case

- A 45 year old gentleman presented with a two-day history of right eye inferior field loss. He had tested positive for COVID-19 three weeks prior to presentation.
- He reported pain around the eye few days prior, but no pain on eye movement.
- Visual acuities were 6/6 in both eyes, colour vision full bilaterally and there was a right RAPD.
- PMH - migraine but no cardio- vascular risk factors for an anterior ischaemic optic neuropathy
- Anterior segment examination was unremarkable but there was significant optic disc swelling in the right eye, which was more prominent superiorly (Figure 1)

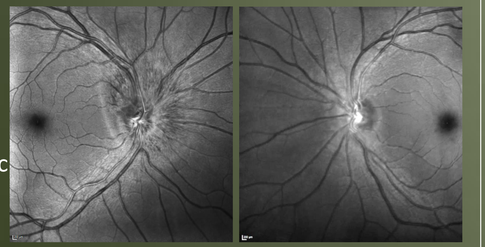


Figure 1: Image of right eye optic disc oedema (normal disc on the left)

Investigations

- Bloods ESR 29, CRP<3, temporal artery ultrasound and MRI head and orbits - NAD
- Goldman visual fields confirmed a right inferior field defect (figure 2)

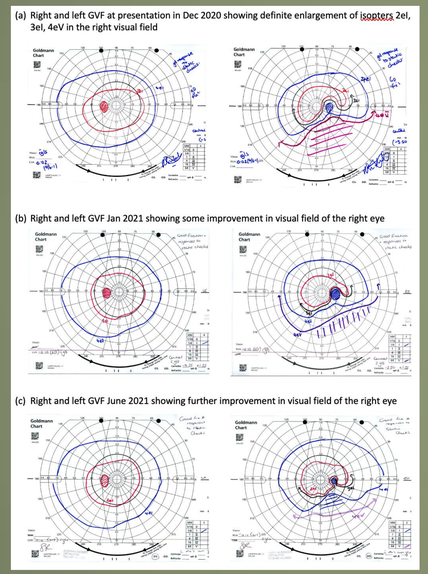


Figure 2: Goldman visual fields of the right and left eyes pre and post initial course of IVMP

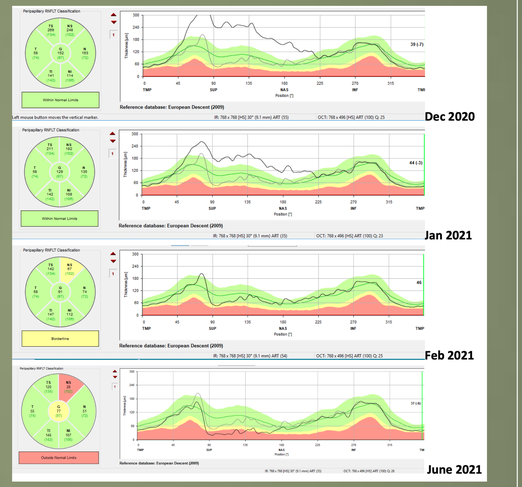


Figure 3: OCT RNFL At presentation the superonasal segment shows an above average RNFL thickness of 248microns. This gradually reduced over consecutive visits and finally shows relative atrophy at 6 months follow up where the superonasal RNFL thickness is 28microns compared to a reference of 102microns.

Management

- 3 days of intravenous methylprednisolone (IVMP)
- An improvement in the visual field and disc swelling was noted post IVMP (figures 2&3)
- The IVMP was converted to a reducing regime of oral prednisolone over 10 days

Discussion

- A diagnosis of COVID-19 related non-arteritic anterior ischaemic optic neuropathy (NAAION) was made.
- The patient regained VA of 6/4 and had a residual inferotemporal visual field defect on six-month follow up (figure 1)
- Literature suggests there are currently only nine reported cases of optic neuropathy or optic neuritis thought to be secondary to COVID with three of these being attributed to neuro myelitis optica spectrum disorders (2-5)
- Ours is the third reported cases of NAAION secondary to COVID
- We are now aware that the virus can give rise to a hypercoagulable state which could be a contributory factor to the development of vascular events such as an NAAION(6)
- Although the use of steroids in NAAION is controversial, similar cases have noted visual improvement with steroid use.It is thought steroids reduce disc oedema and in turn, decrease capillary compression and increase perfusion(7)
- NAAION due to other causes could occur after a COVID infection however this patient did not have any other risk factors and the timeline makes it extremely likely that it was related to SARS-COV-2.

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