

Uhthoff's Phenomenon as Presentation of COVID-19 Infection

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Abstract

This is the first reported case of COVID-19 associated optic neuritis (ON) presenting with classic Uhthoff's phenomenon typically associated with multiple sclerosis (MS). Uhthoff phenomenon, also known as Uhthoff sign or syndrome, is a transient worsening of neurological function lasting less than 24 hours that can occur in multiple sclerosis patients due to increases in core body temperature.

There have been some case reports of ON associated with COVID-19 infection but no reports of ON mimicking MS.

The patient's symptoms resolved very slowly and was not affected by receiving a vaccination against COVID-19.

Keywords: COVID-19, Uhthoff's phenomenon, Multiple sclerosis, Optic neuritis

Background

The importance of this case is to highlight an unusual way that COVID-19 infection can present which mimics a serious neurodegenerative disease.

Case Presentation

A 41-y old gentleman presented with a 3-to-5-week history of intermittent symptoms which he described as left eye strain, at times worse with eye movement. This was associated with headache on many occasions and the GP prescribed Gabapentin which improved the headache symptoms somewhat.

On examination, the visual acuity was 6/6 right and 6/6-3 left. There was no relative afferent pupillary defect but possibly mild red desaturation in the left eye. The ocular examination was otherwise completely normal.

On further questioning, he described that his visual symptoms were markedly worsened following a hot bath and after playing football with his son (Uhthoff phenomenon).

As his symptoms were highly suggestive of an optic neuritis, he had an MRI scan and standard blood tests. All the tests were reported as normal.

The patient reported symptoms of tingling sensation in his hands and feet, fatigue and eye symptoms worsening. He had difficulty doing work requiring concentrating with eyes particularly left eye for periods longer than 10 minutes. The eye symptoms sometimes switched eyes but most severe left with pinpoint left temple pain and pressure feeling as well as a pumping pain sometimes at back of eye very deep but not as severe as at presentation. He also described a "nerve pain" across face and lips which was gradually improving.

Two months after initial symptoms, he had a positive COVID-19 antibody blood result. IgG level was 5.2(U/mL). His symptoms continued to be very troublesome for 2 more months before complete resolution.

Discussion

To the best of our knowledge, this is the first reported case of COVID-19 infection mimicking Uhthoff's phenomenon.

Uhthoff described exercise induced vision loss in 1890 and the symptoms were named after him in 1961 [1]. Dysregulation in demyelinated axons with a conduction blockade of in the demyelinated plaques which is temperature sensitive is the most widely accepted mechanism [2].

Since the outbreak of the COVID-19 pandemic there have been reports documenting involvement of all the ocular structures in infected patients [3]. Optic neuritis has been reported affecting one or both eyes [4-8].

The exact mechanism of optic neuritis seems to be poorly understood at this stage and current theories include direct involvement with the SARS COVID virus; a parainfectious demyelinating disease with a viral prodrome; myelin oligodendrocyte glycoprotein (MOG)-IgG-related optic neuritis secondary to the COVID infection. Further studies are required.

Our patient continues to improve following his vaccination and this case highlights the importance of including COVID-19 PCR and antibody testing as part of the workup for patients presenting with neurological disease.

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